



Addressing Vaccine Hesitancy in Mewat, Haryana

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We hope that the assessment will provide insights that could support the state in devising key strategies to address vaccine hesitancy issues and further aid in improvements in overall immunization coverage to a larger extent.

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ABBREVIATION

AEFI	Adverse Event Following Immunization
ANM	Auxiliary Nurse Midwife
ASHA	Accredited Social Health Activist
AWC	<i>Anganwadi</i> Centers
AWW	<i>Anganwadi</i> Worker
AYUSH	<i>Ayurveda, Yoga</i> and Naturopathy, <i>Unani, Siddha</i> and Homeopathy
BCC	Behavioral Change Communication
BCG	Bacillus Calmette Guerin
BMO	Block Medical Officer
BPO	Block Program Officer
CAPI	Computer Assisted Personal Interviewing
cMYP	Comprehensive Multi-Year Plan
DIO	District Immunization Officer
DIPRO	District Information and Public Relations Officer
DPM	District Program Manager
FAQ	Frequently Asked Questions
FIC	Full Immunization Coverage
FLWs	Front-line Workers
GoI	Government of India
HR	High Risk
ICDS	Integrated Child Development Services
IEC	Information, Education and Communication
IMI CES	Intensified Mission Indradhanush Coverage Evaluation Survey
IPC	Inter Personal Communication
IPV	Inactivated Poliovirus Vaccine
ITSU	Immunization Technical Support Unit
KII	Key Informant Interviews
MCP	Mother-Child Protection
MCV	Measles Containing Vaccine
MO	Medical Officer
MoHFW	Ministry of Health and Family Welfare
MPHW	Multi-Purpose Health Worker
MR	Measles Rubella
NFHS	National Family Health Survey
OBC	Other Backward Category
ODK	Open Data Kit
OPV	Oral Polio Vaccine
ORS	Oral Rehydration Solutions
PCV	Pneumococcal Conjugate Vaccine
PPS	Probability Proportional to Size
RI	Routine Immunization
RVV	Rotavirus Vaccine
SC	Scheduled Caste
SMO	Surveillance Medical Officer
ST	Scheduled Tribe
UIP	Universal Immunization Programme
VPD	Vaccine Preventable Diseases
WCD	Women and Child Development
WHO	World Health Organization

EXECUTIVE SUMMARY

While India has witnessed significant gain in vaccines uptake, we are yet to achieve the goal of 90% full immunization coverage. Low vaccine coverage has multiple factors underneath it. However, looking at the improvement done on the delivery-side, it could be attributable to vaccine hesitancy - the delay of acceptance or refusal of vaccination despite the availability of vaccines. Hence, it is essential to scrutinize areas with low immunization coverage and understand the factors behind it. Mewat in Haryana is one such district which has relatively low immunization coverage (NFHS-4). On the request of Government of Haryana, this study was conducted in Mewat to understand the magnitude of vaccine hesitancy, its proximal determinants and recommend specific interventions to address it.

A mixed-method study design was adopted which involved: 1) Household survey (479 households), 2) Key informant interviews with healthcare providers (10 service provider) and 3) Expert group discussion (one group discussion).

In Mewat, age appropriate vaccination was observed in 48.8% of the children, whereas, 31.6% were partially vaccinated and 19.6% were unvaccinated. Fear of side effects of vaccination (35%) was one of the main reasons for partial and no immunization. About 22.1% of households in Mewat were either hesitant or refused to vaccinate their children. Out of all four blocks, Punahana block had the highest proportion of vaccine hesitant or refusal households (33.3%). A strong patriarchal society with low women empowerment was observed in the community while interacting with beneficiaries and front-line-workers. Further, there existed a misconception that vaccines cause infertility, which leads to gender disparity in immunization of children and could potentially be the reason for outright rejection of vaccines.

Based on the study findings and interactions with different stakeholders at various levels, we propose a spectrum of recommendations under three broad themes to address the issues of vaccine hesitancy:

Host or parental factors:

- Tailored campaigns facilitating informed decision-making for households towards vaccination
- Improve involvement of households in health meetings by providing incentives

Agent or vaccine specific factors:

- Improve competency of front-line workers through refresher trainings at regular intervals
- Increasing the number of human resources for improved quality of immunization services

Environmental or external factors:

- Formal and sustained involvement of religious and political leaders in the programme
- Behavioral change communication activities focusing on improving male participation, pictorial IEC display for illiterates and discussion sessions involving households to fill the communication gap, especially targeting illiterate populations
- Inter-departmental integrated activities to improve engagement of stakeholders and front-line workers
- Mosque announcement before Immunization days
- Contacting fathers or male members over the phone to mobilize their children to the immunization session

Multi-dimensional, gender and culturally sensitive approaches are required to address the issue of vaccine hesitancy in the area. Involvement of other line departments will help in catalyzing the adopted strategies and sustain the achievements in the long run. Further, we call for supplementary research and development, following the interventions, for dealing with the issues of vaccine hesitancy and increase the acceptance.

CHAPTER 1: INTRODUCTION

INTRODUCTION

1.1 Background

Immunization is one of the most important public health interventions in reducing morbidity and mortality due to vaccine preventable diseases. It currently prevents 2-3 million deaths in a year¹. India's immunization program (one of the largest in the world) caters to a birth cohort of around 26 million infants and 29 million pregnant women every year through 12 million sessions. India's recent history witnessed the achievement of critical milestones, which included receiving polio-free certification in 2014 by World Health Organization, the successful elimination of maternal and neonatal tetanus in 2015 and the introduction of new vaccines under the Universal Immunization Programme (UIP).

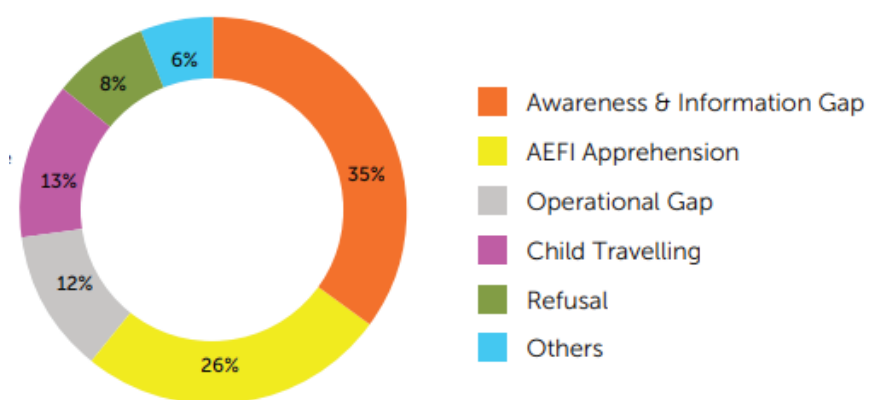
However, despite being operational for decades, the immunization coverage among children aged 12-23 months in the country has increased at a slow pace of almost one percent each year (from 35% in 1992-93 to 62% in 2015-16)². A large proportion of children are still missing their vaccine doses due to demand-side issues. Almost 35 percent of parents are

not aware of immunization benefits, 26 percent do not vaccinate due to fear of side effects or adverse events following immunization (AEFI) and another 13 percent are "missed" because children were unavailable to receive the services (Figure 1)³. The reasons vary across states and districts and include both supply and demand-side issues.

The country's "Comprehensive Multiyear Plan" (cMYP) (2018-2022) and "Road Map for achieving 90% full immunization coverage in India, a guiding document for the states" emphasize the need to focus on strategic communication to build vaccine confidence, strengthen demand generation and expansion, and institutionalize partner support for greater accountability^{2,4}.

Vaccine hesitancy refers to delay in acceptance or refusal of vaccination despite the availability of vaccination services⁵. It has surfaced in WHO's list of top 10 global health threats in 2019 and has drawn significant concerns across the world due to the increase and resurgence of vaccine preventable diseases⁶. The reasons

Figure 1: Reasons of vaccine noncompliance among children aged 12-23 months



Concurrent RI monitoring, Jan to Sept 2019

for reluctance or refusal are complex and context-specific, varying across time, place and vaccines⁷. The continuum of vaccine hesitancy varies from active demand of vaccination by an informed public to outright refusal of some or all vaccines⁸. Vaccine-hesitant individuals are

a heterogeneous group in the middle of this continuum (Figure 2). They may refuse some vaccines, but agree to others; they may delay vaccines or accept vaccines according to the recommended schedule, but are unsure in doing so.

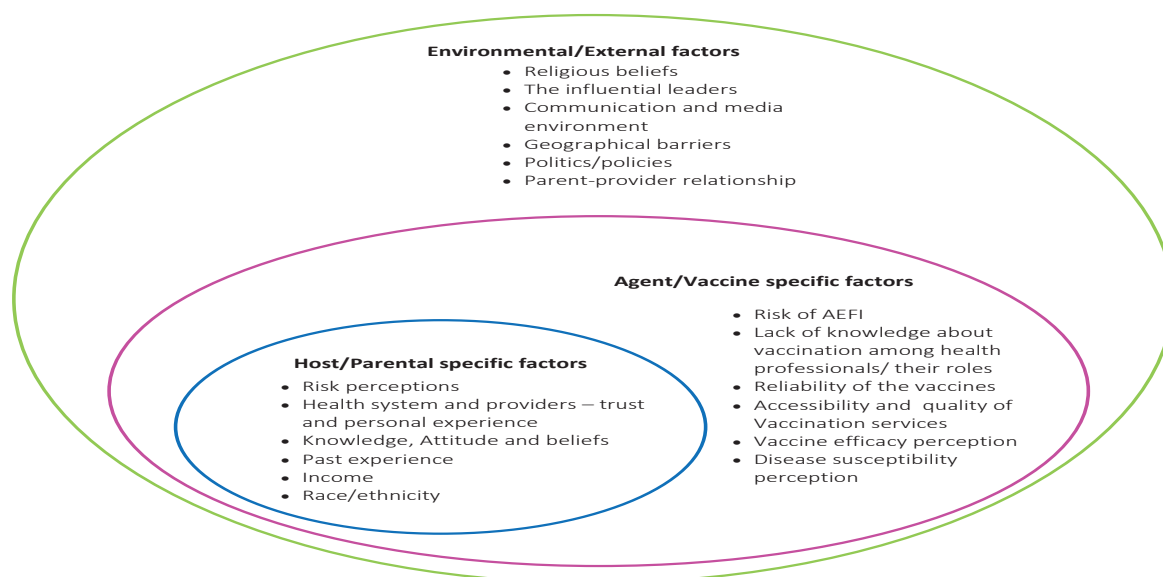
Figure 2: Vaccine hesitancy continuum



The behavior responsible for vaccine hesitancy can be related to confidence (mistrust for a vaccine or the provider), convenience (do not perceive a need for a vaccine or do not value the vaccine) and complacency⁹. Vaccine complacency is known to be present where the risk of vaccine preventable diseases is

perceived to be low and where vaccination is not considered essential. This study adapted the Gowda *et. al.* framework to describe the factors influencing parental vaccine hesitancy (Figure 3). It depicts the complex interaction of environment, agent and parental factors^{8,10}.

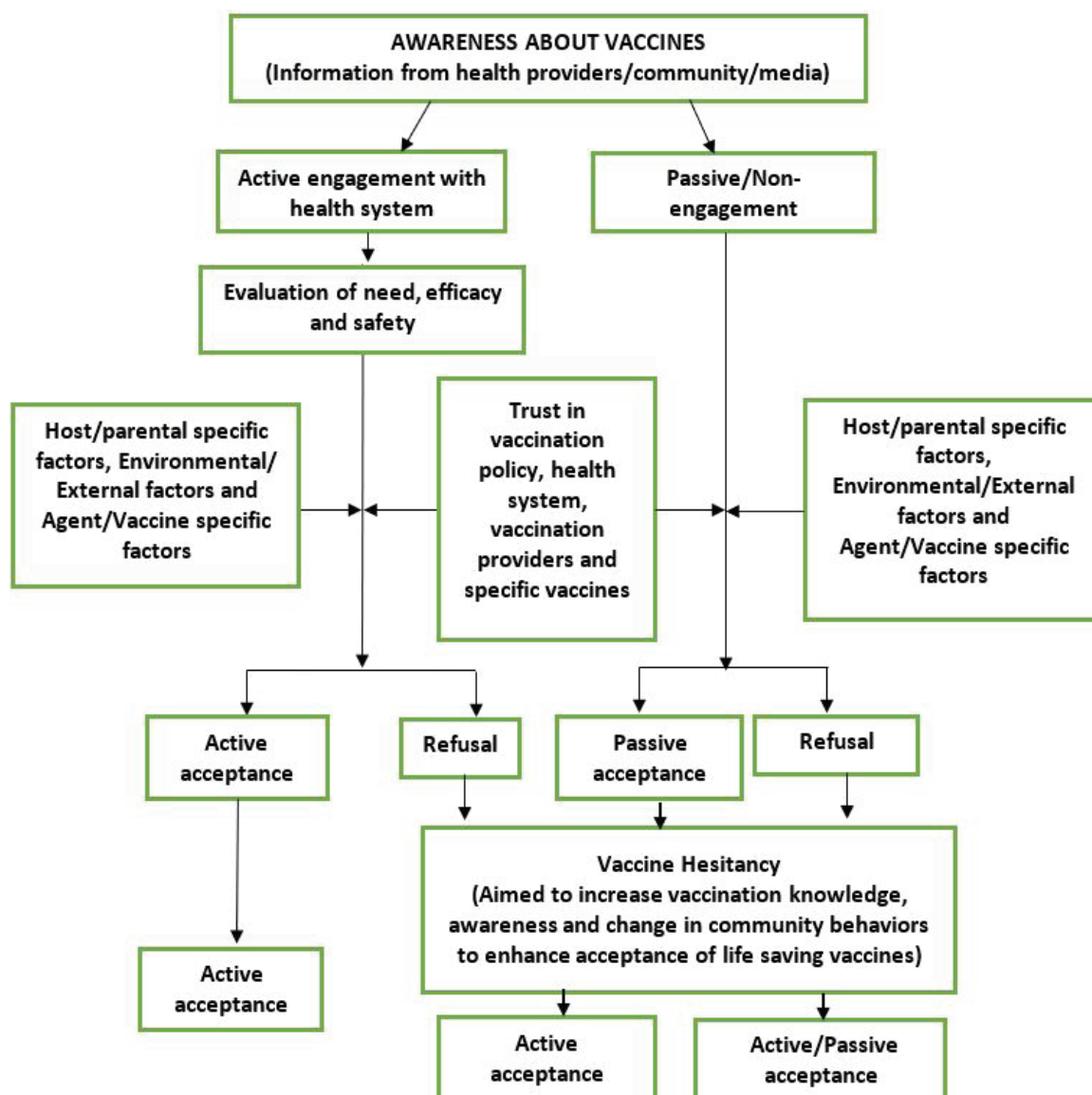
Figure 3: Framework for factors influencing parental vaccine hesitancy adapted from Gowda *et. al.*



1.2 Decision-making process for vaccination

The behavior of vaccine hesitancy originates from the decision-making process and reflects a constellation of factors that may influence the decision to accept or refuse some or all vaccines in accordance with the recommended schedule. Decision-making regarding vaccination, especially in developing countries such as India,

is very complex. Figure 4 describes a decision-making model for vaccination¹⁰, which states the various sources of information on vaccination. It further compounds with active engagement with health or health apathy; social, political, economic, religious and cultural factors, and trust in health system resulting in rejection or acceptance of vaccines.

Figure 4: The process of decision-making

1.3 Rationale of the study

To achieve the goal of 90% Full Immunization Coverage (FIC), it is essential to identify the issues and make tailored strategies. Vaccine hesitancy has gained increasing attention as a critical determinant to immunization uptake. To counter barriers linked to vaccine hesitancy, program managers must adequately identify the target population and understand the true nature of their vaccination concerns. The

overarching aim of this study is to understand the nature and contributing factors of vaccine hesitancy, and suggest strategies to address it.

1.4 Study objectives

- To understand the magnitude of vaccine hesitancy and identify its underline factors in Mewat, Haryana
- To suggest evidence-based strategies to address the underline factors of vaccine hesitancy

CHAPTER 2: METHODOLOGY

METHODOLOGY

2.1 Study area selection

There are several pockets in the country with historically low vaccination coverage. Mewat district in Haryana falls in the lowest decile, as far as immunization is concerned. FIC data from NFHS 4 shows poor vaccination

coverage of 13.1% in the district. The recent WHO concurrent monitoring data also re-verified the inadequate coverage of less than 50% in most blocks of Mewat region and frequent outbreaks of measles and diphtheria have also been reported from Mewat.

Table 2.1: Immunization coverage in Haryana and Mewat

Area	FIC (NFHS 4, 2015-16)	FIC (IMI CES, 2018)	No Immunization (IMI CES, 2018)
Haryana	62.2%		
Mewat	13.1%	40.8%	22.5%

In this context, Government of Haryana requested Immunization Technical Support Unit (ITSU), Ministry of Health and Family Welfare (MoHFW), Government of India (GoI) to conduct a study to understand the magnitude of vaccine hesitancy in Mewat region and recommend evidence-based strategies to counter coverage barriers.

2.2 Study design

The study was conducted in all four blocks (Nuh, Ferozepur Jhirka, Punahana, and Taoru)

of Mewat in June 2019. A mixed-method design was adopted for the assessment which was conducted in three stages. In the first phase, pre-determined sample of households were surveyed for quantitative data collection followed by qualitative data collection from selected stakeholders (such as front-line workers, medical officers, district immunization officer); and in the third stage a group discussion with different group of stakeholders for result validation and to frame feasible strategies for further action was carried out.

Sample size calculation for quantitative data collection¹¹

The sample size was calculated based on the proportion of partial and unimmunized children in the area from latest available information (IMI-CES, 2018). The formula used for the estimation of sample size was:

$$n = \frac{(z^2 * p * q)}{d^2}$$

z = Standard normal variate for level of significance; for 95% significance level (1.96);

p="Proportion of partial/unimmunized children (0.59)";

q= 1-p (0.41); d=precision (0.05)

Households to be covered=372* design effect (1.2) *10% non-response rate

The total household to be covered = 491

2.3 Sampling procedure

Total sample was distributed across four blocks using *Probability Proportional to Size* (PPS) covering 0-6 years of population. Further, the sample within the sub-districts was distributed as per rural and urban populations. Villages were primary sampling units in rural areas and wards in urban areas. A two-stage sample selection was adopted.

- a) Villages and wards were selected randomly within each block
 - Villages with less than 100 households were linked with the adjacent village for selection of households
 - Villages with more than 200 households were segmented into sections and one section was randomly selected for the selection of households
- b) In each selected village or ward, a systematic random selection of household was done using the existing house list with FLWs.
 - Around 16 households were systematically selected from each selected village and ward
 - Information regarding only one child was recorded from each household. In case of more than one child in the age group of 0-23 months, information pertaining to the youngest child was recorded to minimize the recall bias.

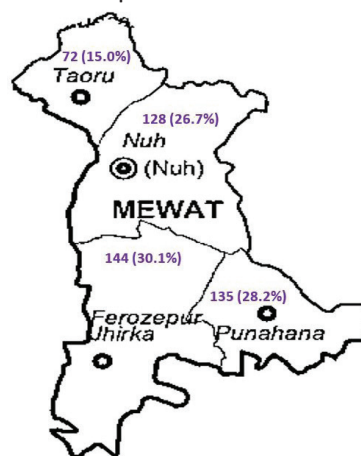
2.4 Data processing and analysis

Data Collection: Quantitative data collection was carried out on Computer Assisted Personal Interviewing (CAPI) tool for real-time data entry. A customized data collection tool was prepared in the open data kit (ODK) - an open software, which was piloted before the survey. The application had in-built data checks and algorithms, which helped in ensuring the quality of data collection and elimination of data entry errors. Interviewers were trained for the flow of questions and use of applications before data collection. During the survey, data was collected from 479 households (Figure 5).

Qualitative data was collected in the form of key informant interviews (KIIs), informal interaction and group discussion with front-line workers

(ANM, ASHA, mobilizers and AWW), programme managers and other stakeholders. Around ten individual KIIs were conducted among front-line workers and healthcare providers.

Figure 5: Block wise sample distribution



A district level workshop was conducted to disseminate and validate quantitative and qualitative data findings. An informal group discussion was also carried out to explore the plausible issue-based solutions.

District level nexus planning workshop: A district level workshop was conducted with participation of critical stakeholders representing all levels of programme implementers and decision-makers. The participants were divided into three groups:

- I. Front-line workers comprising of ANMs, ASHAs, Mobilizers and AWWs
- II. Programme managers consisting of DIO, DPM, District IEC Officer, BMOs and Health supervisors
- III. Representatives from partner agencies (Chetnalaya, CORE, IPE Global, WHO), Government line departments (Health, ICDS, Education) and medical college.

Quantitative and qualitative findings were analyzed, broad thematic areas were identified and presented in the workshop. Stakeholders were briefed about the objectives of the study and critical findings from the study. They were encouraged to develop context-specific strategies so that acceptance of vaccines and immunization coverage can be improved in the community.

Broad study findings were discussed in-depth as part of closed-group discussions, followed by presentations on proposed interventions.

The group discussions were audio recorded and further qualitative analysis was conducted (detailed under chapter 3).

Table 2.2: Number of participants in the district nexus planning meeting

Type of service providers	No. of participants
Group 1	
ASHA	7
AWW	5
ANM	2
MPHW	1
ASHA Facilitator	1
Mobilizers	3
Coordinators	2
Group 2	
Medical Officers	8
Civil Surgeon	2
DIO	1
Nodal Officer	1
Group 3 (*Partner organizations: Chetnalaya, CORE, IPE Global and WHO)	
Medical college faculty	5
State coordinators*	3
District coordinators*	7

Definitions: To analyze the behaviors related to vaccine hesitancy, four key groups were formulated based on their knowledge, attitude and practice regarding vaccination. The four groups were defined as

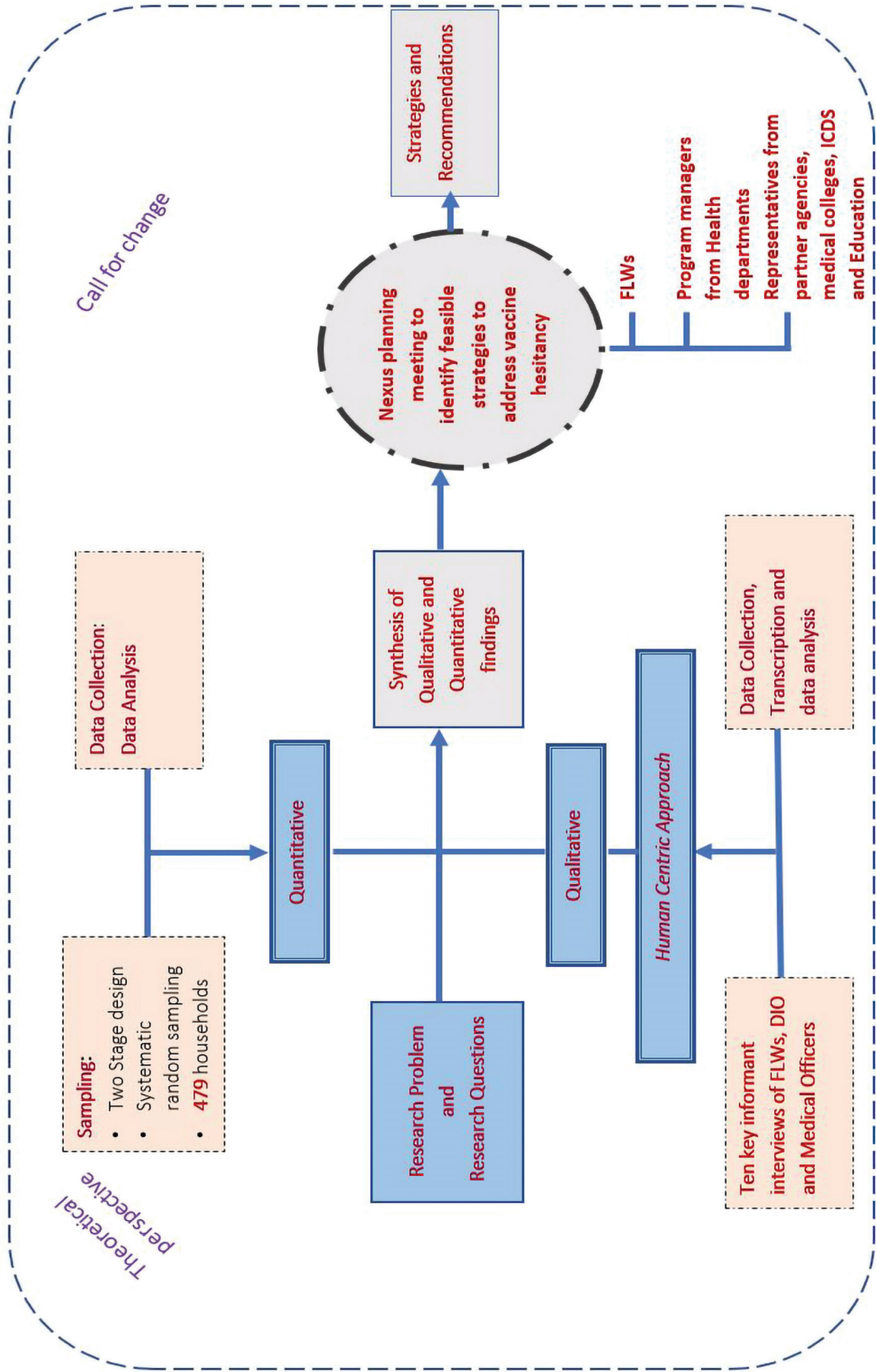
1. Active users: Respondents who have ensured that their children have received vaccines as per the recommended immunization schedule.
2. Passive users: Respondents with children who have
 - a. Completed vaccination but not as per the age
 - b. Partially vaccinated due to supply side or demand side issues.
 - c. Not vaccinated due to supply side issue but willing to vaccinate in future
3. Vaccine hesitant: Respondents whose children have not received and refused few vaccines irrespective of supply side issues.
4. Vaccine refusal: Respondents who always refuse vaccines and do not consider it as important due to demand side issues.

Data Analysis: An empirical research approach for data analysis was used to draw conclusions. A set of predefined indicators were analyzed in Excel and STATA 13. The results were presented in a descriptive, bi-variate form to support in decision-making. Triangulation of data from the quantitative, qualitative and nexus meeting was done for comparison and ensure consistency of information. To know the status of immunization, vaccination card was used as the primary source of information. Recall method was used to capture information, where vaccination card was not available.

2.5 Ethics

Written and verbal informed consent in local language was obtained from all respondents during the survey and qualitative interviews. Full anonymity and confidentiality were maintained. All the data were coded and the identifiers were removed. It was ensured that the data were accessible only to the authorized members of the research team.

Figure 6: Study framework





CHAPTER 3:

FUNDINGS

FINDINGS

3.1 Immunization status of children in Mewat

3.1.1 Profile of respondent

Socio-demographic profile:

In the study sample, around 60% of the children were in the age group of 0-11 months and the rest were in the age group of 12-23 months. A majority of respondents were Muslims (69.5%), followed by Hindu (30.1%) and others (0.4%). About half of the respondents (49%) belonged to the other backward category (OBC), 8.4% to the scheduled caste (SC), 3.6% to the scheduled tribe (ST) and 39% to non-SC/ST/OBC category. Education level of respondents was low. About 58.8% were uneducated, 13.2% had completed their education up to class 5, 10.5% up to class 8, and only 17.5% had studied above class 8.

Majority of caregivers were homemakers (90.2%) (Figure 7).

In majority of the cases, the mother was the primary caregiver of the child (88.3%) and in rest, it was either the grandmother, aunt or elder sister. The mean age of the mother at the time of interview was found to be 25.7 years. Around 34.2% of the children included in the study were of the birth order four and above, reflecting a bigger family size in the sample. A few more than a quarter (28.7%) were of the first order. The children of second and third-order were 22% and 15.1% respectively (Figure 8). A higher birth order of index child and low mean age of women at the time of interviews depicts early age of childbearing in the community.

Figure 7: Socio-demographic indicators of the study area

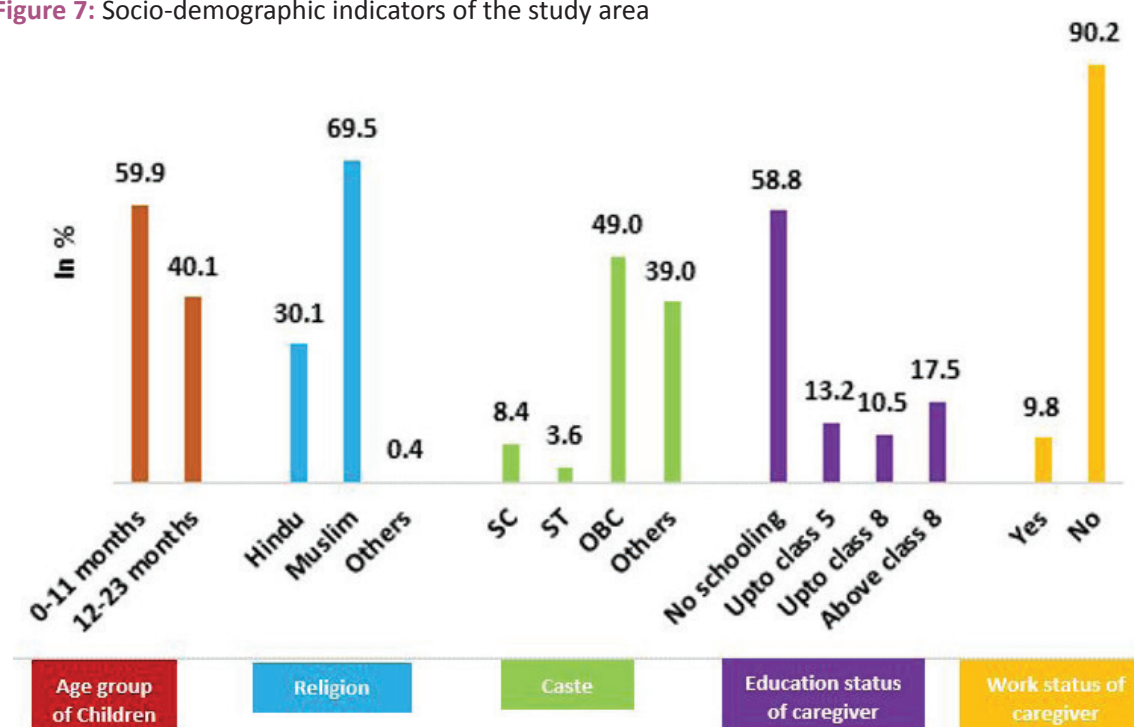
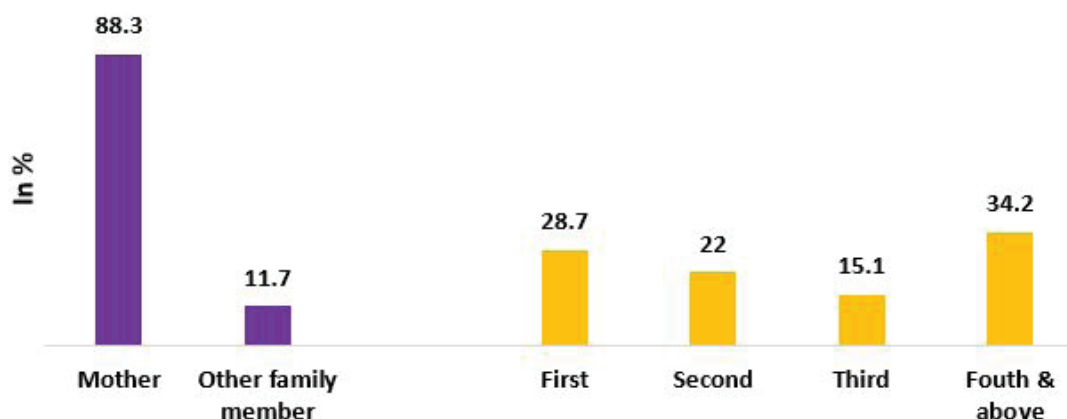


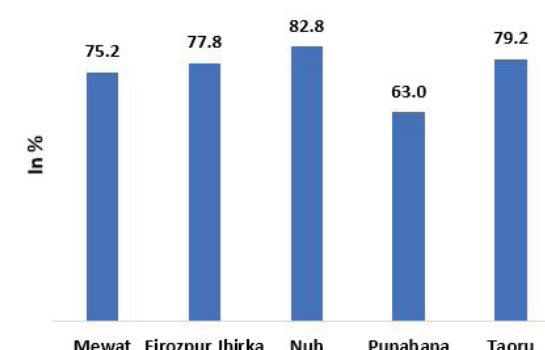
Figure 8: Type of care providers and birth order of children

3.1.2 Vaccination Status of children

Presence of Mother-Child Protection (MCP) card:

The MCP card is a valuable tool for parents and providers to track the vaccination status of pregnant women and children. It also helps in assessing the immunization coverage under the Universal Immunization Programme. The MCP card was available with three fourth (75.2%) of the respondents. The highest proportion of respondents with immunization card was in Nuh (82.8%) and lowest in Punahana (63%). Availability of the MCP card was higher in the active group (85.6%) as compared to the

passive (79.4%) and hesitant group (53.8%) (Table 3.1.2).

Figure 9: Availability of immunization card in blocks of Mewat**Table 3.1.2:** Place of delivery and availability of immunization card

	Total (%) N=479	Active (%) N=111	Passive (%) N=262	Hesitant/ Refusal (%) N=106
Place of delivery of index child				
Government facility	54.9	60.4	60.3	35.8
Private facility	23.6	27.0	21.4	25.5
Home delivery	21.5	12.6	18.3	38.7
Availability of immunization card	75.2	85.6	79.4	53.8

Place of delivery of index child:

More than half of the respondents chose government facilities for the delivery of the index child (54.9%), one-fourth chose private facilities for delivery (23.6%) and 21.5% delivered at home. About 60% of respondents from both the active and passive groups availed the delivery services from the government facilities. While, a quarter of respondents (27.0%) in the active group and one-fifth (21%) in the passive group chose

private facilities for delivery. Home delivery was highest among hesitant or refusal group (38.7%) as compared to active (12.6%) and passive group (18.3%) (Table 3.1.2).

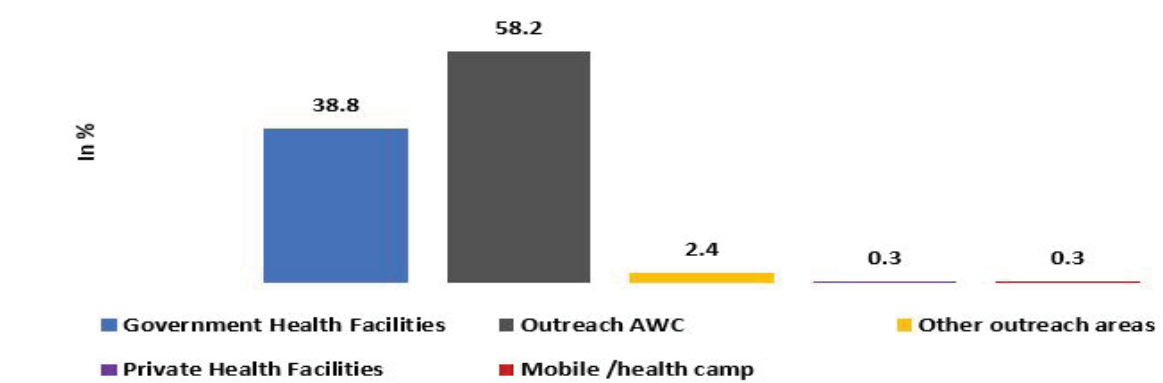
Preferred place of vaccination:

Most of the children received vaccination through the government system in the community. The preferred facility for availing the immunization services was outreach AWCs

(58.2%), followed by government health facility (38.8%), other outreach areas (2.4%), private

health facilities (0.3%), and health camps (0.3%) (Figure 10).

Figure 10: Preferred place of vaccination

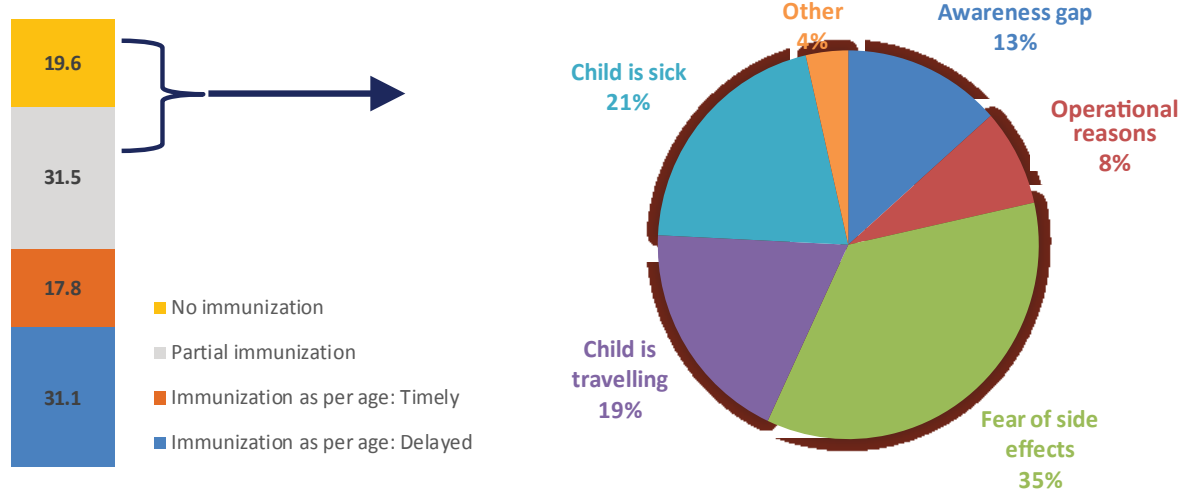


Vaccination status of children:

Notably, one-fifth (19.6%) of the children did not receive any vaccination and only 17.8% of children were found to be immunized as per age. Immunization was delayed in 31.1% of children and 31.5% were partially immunized (Figure 11).

Fear of side effects of vaccines was found to be the common reason for no immunization (35%), followed by the child's illness (21%), child travelling (19%), awareness gap (13%) and operational reasons (8%) (Figure 11).

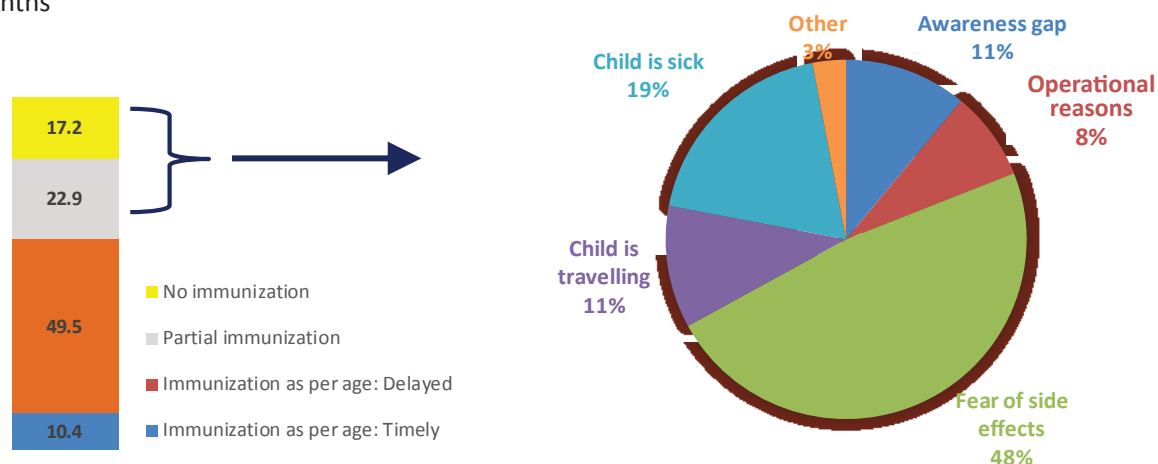
Figure 11: Vaccination status and reasons for partial and no immunization among children aged 0-23 months



Full immunization is usually calculated among 12-23 months of children, so for comparison, vaccination status is also presented separately for this age group. Among children aged 12-23 months, timely immunization was observed among only 10.4% of children and delayed

in almost half (49.5%) of the children. About 22.9% of children were partially immunized and 17.2% did not receive any vaccines. Fear of side effects of vaccines was found to be the common reason for no or partial immunization (48%) (Figure 12).

Figure 12: Vaccination status and reasons for partial and no immunization among children aged 12-23 months

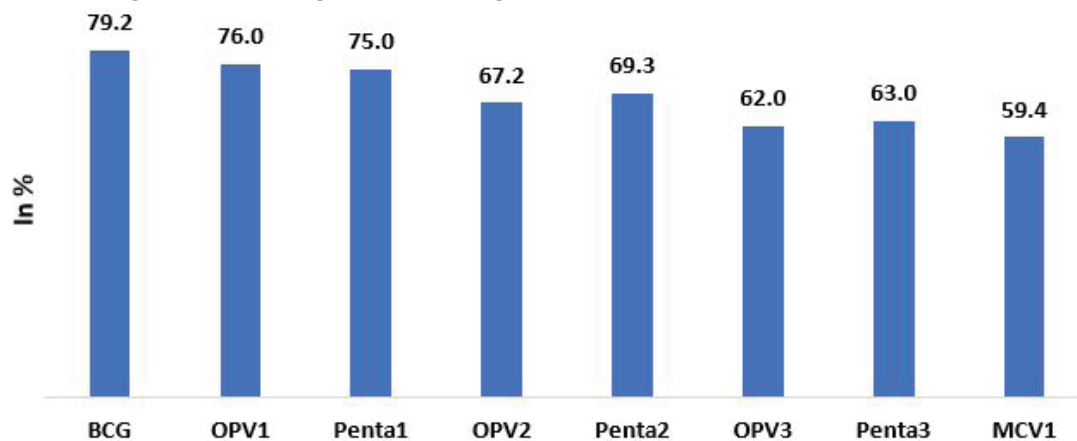


Antigen wise coverage:

Among children aged 12-23 months, BCG doses had the highest coverage (79.2%) followed by first, second and third dose of OPV and Pentavalent vaccines respectively (Figure 13). Overall, a decreasing trend was observed with

OPV-1 (76.0%), Pentavalent-1 (75.0%) to OPV 3(62.0%), Pentavalent-3 (63.0%) and a further fall was observed for MCV-1 (59.4%) (Figure 13). The dropout rates from BCG to MCV-1 was calculated to be 25%, while that of Pentavalent-1 to Pentavalent-3 was 16% (Figure 14).

Figure 13: Antigen wise coverage of children aged 12-23 months

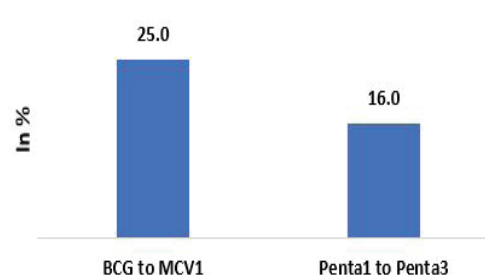


3.1.3 The magnitude of vaccine hesitancy

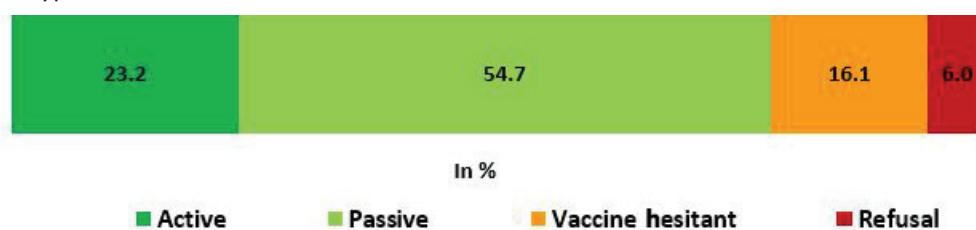
Type of vaccine beneficiaries:

Overall, 23.2% of respondents were active vaccine users, 54.7% were passive, 16.1% were hesitant and 6% refused to receive any vaccine (Figure 15).

Figure 14: Antigen wise dropout rates of children aged 12-23 months*

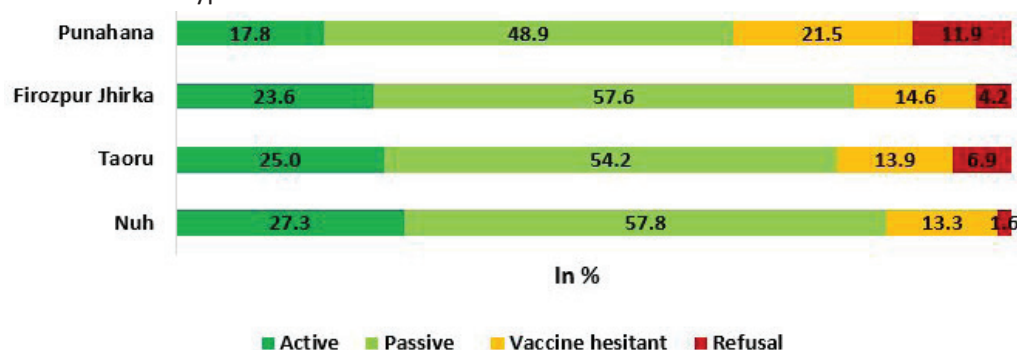


*Dropout rate = [(coverage of initial vaccine dose – coverage of ending vaccine dose) ÷ (coverage of initial vaccine dose) × 100], e.g. (BCG-Measles)/ (BCG)*100.

Figure 15: Type of vaccine users

Almost similar trend of active and passive vaccine usage was observed in Firozpur Jhirka,

Taoru and Nuh whereas, Punahana had the highest hesitant and refusal group (21.5% and 11.9% respectively) (Figure 16).

Figure 16: Block wise type of vaccine users in Mewat

3.2 Factors affecting vaccine hesitancy

3.2.1. Host or parental factors

The study explored the knowledge, perception and attitude of mothers or caregivers regarding

the immunization of their children. In table 3.2.1.1, specific host or parental factors affecting vaccination are shown.

Table 3.2.1.1: Perception and attitude towards vaccination

	Total (%) N=479	Active (%) N=111	Passive (%) N=262	Hesitant/ Refusal (%) N=106
Thinks vaccination is important				
Yes	88.5	100	95.8	58.5
No	11.5	0.0	4.2	41.5
Willingness to pay for vaccines				
Yes	32.2	31.5	36.6	21.7
No	67.8	68.5	63.4	78.3
Feels vaccination safe				
Yes	83.9	93.6	93.5	50
No	8.2	0.9	1.9	31.1
Don't know	7.9	5.5	4.6	18.9

Both the active and passive groups unanimously agreed that the vaccination was important for their child whereas, more than half in the hesitant group surprisingly also felt the same. About 32.2% of respondents revealed that if

situation arises, they were willing to pay for vaccination.

A majority of respondents considered vaccines were safe (83.9%) and only few did not know

about the safety aspects of vaccines (7.9%). Interestingly, this proportion was high among both the active and passive groups (more than 90%). Whereas, about one third of the vaccine hesitant or refusal group did feel vaccines are safe. The finding highlights that vaccine safety issue is an underlying concern among vaccine hesitant and refusal group which needs to be addressed.

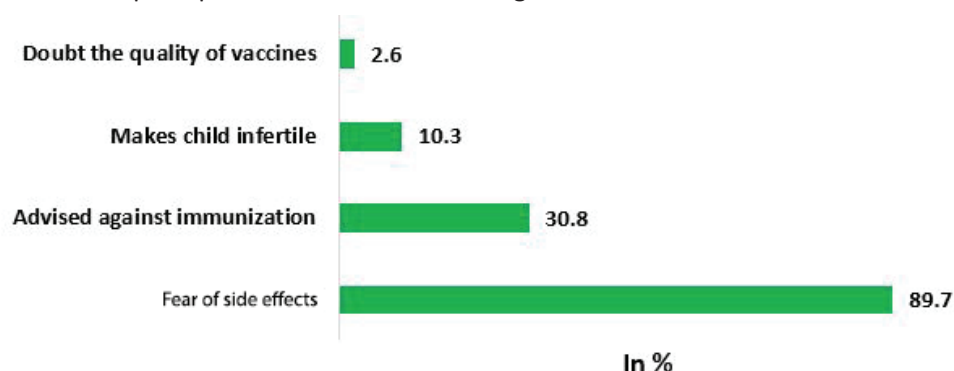
Reasons for considering immunization not safe:

The various reasons were cited for not considering the vaccine safe. Overall, 16.1% of

respondents felt immunization is not safe. The reasons behind it are shown in figure 17.

The main reason for not considering immunization safe was fear of side-effects of vaccines as reported by 89.7% of the respondents. About 30.8% of respondents reported advice against immunization as the reason for not considering immunization safe. Additionally, about 10.3% respondents also feared that vaccination will make their child infertile and 2.6% had doubts on the quality of vaccines provided to them.

Figure 17: Reasons behind perception of immunization being unsafe



Awareness on next due vaccine:

Awareness about vaccination plays a critical role in acceptance of vaccines. Information regarding the vaccination schedule and the due date of vaccination facilitates mothers and caregivers plan well in advance, thereby reducing the probability of missed vaccinations. Findings revealed that overall, awareness for next due date was among 42.9% of primary

caregivers. About half of respondents in the active and passive group and 10.4% in hesitant or refusal group were aware of the next due date of vaccination. This clearly shows the lack of attention towards child's vaccination and the information provided by the service providers on immunization schedules by the hesitant and refusal group (Table 3.2.1.2).

Table 3.2.1.2: Knowledge of due vaccines

	Total (%) N=479	Active (%) N=111	Passive (%) N=262	Hesitant/ Refusal (%) N=106
Knowledge on next vaccination due date				
Yes	42.9	47.7	49.2	10.4
No	57.1	52.3	50.8	89.6

Knowledge of vaccine preventable diseases:

Knowledge on Vaccine Preventable Diseases (VPDs) strengthens the faith of people on vaccination and motivates them to make sincere efforts to get their children immunized. About

24.4% in active group, 30.2% in passive group and 59.4% in hesitant or refusal group had no knowledge about any VPDs. Further, only 64.7% of respondents had knowledge about at least one VPD. In the active group, 63.1% respondents had knowledge of at least two

VPDs, which was 59.2% in the passive group and only 28.3% in hesitant or refusal group. Overall, knowledge of at least two VPDs was among 53.2% of respondents. This brings to light the

need to generate awareness regarding Vaccine Preventable Diseases (VPDs) in the community to generate demand and improve acceptance of vaccination (Table 3.2.1.3).

Table 3.2.1.3: Knowledge of VPDs

	Total (%) N=479	Active (%) N=111	Passive (%) N=262	Hesitant/ Refusal (%) N=106
Knowledge of VPD				
No knowledge on any VPD	35.3	24.4	30.2	59.4
Knowledge on one or more VPD	64.7	75.6	69.8	40.6
Knowledge of at least two VPDs				
Yes	53.2	63.1	59.2	28.3
No	46.8	36.9	40.8	71.7

Decision-making for child's health:

Results on the decision making regarding the health of the child showed that only 8.7% of primary caregivers took decision themselves. This proportion varied across the active, passive and hesitant group (5.2%, 10.4% and 8.4% respectively), depicting lesser say on the decision making for child's health issues by primary caregiver. It was also observed that in majority of the cases, decisions were taken

either jointly with husband or with the family. It was further noted that active users mostly took decision either with family (50.5%) or husband (44.3%). Whereas, majority of passive and hesitant users took decisions with husbands (52.8% and 68.4% respectively) and not with family (36.8% and 23.2% respectively). This shows that influence of husbands in decisions-making regarding child health among the passive and hesitant families are more (Table 3.2.1.4).

Table 3.2.1.4: Family decision-making for child health

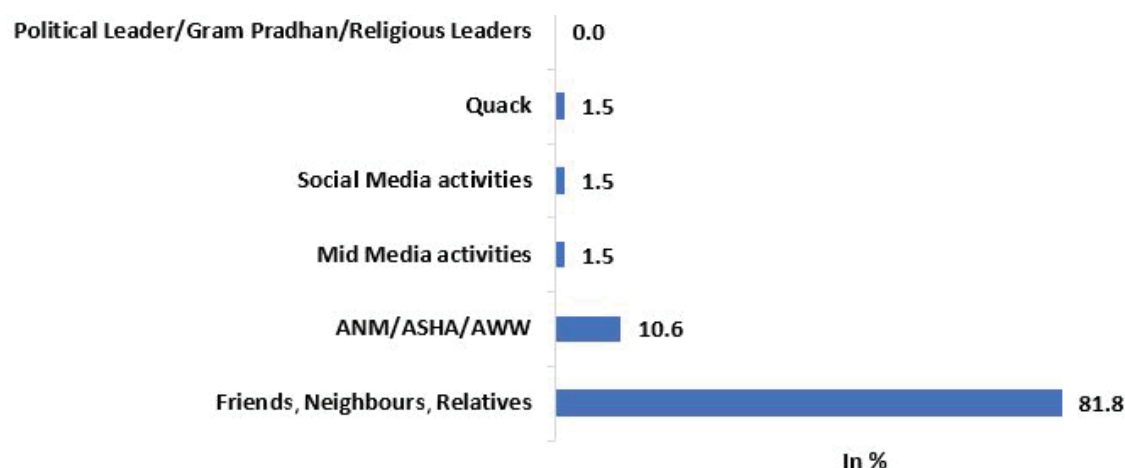
	Total (%) N=479	Active (%) N=111	Passive (%) N=262	Hesitant/ Refusal (%) N=106
Decision-maker for child health				
Primary caregiver	8.7	5.2	10.4	8.4
Jointly with husband	54.4	44.3	52.8	68.4
Jointly with family	36.9	50.5	36.8	23.2
Decision-maker for child vaccination				
Primary caregiver	19.9	19.6	20.3	18.9
Jointly with husband	44.2	36.1	42.4	56.8
Jointly with family	35.9	44.3	37.3	24.3

Decision-makers regarding vaccination:

Similarly, decision regarding vaccination was independently taken by only one-fifth of primary caregivers, rest were dependent on either their husband or family members. This proportion was same across the active, passive and hesitant groups (19.6%, 20.3% and 18.9% respectively). Similar to the findings of the decision making for child health, for vaccination

related decisions as well, the prime influencer was the husband among passive and hesitant group (42.4% and 56.8% respectively). Whereas, among active group the decision was majorly taken jointly by family members (44.3%) followed by husband (36.1%) (Table 3.2.1.4).

This reflects a greater need and focus towards involvement of husband and family members (father in law and mother in law) as a key strategy.

Figure 18: Sources of receiving negative information on RI

Source of negative information on immunization:

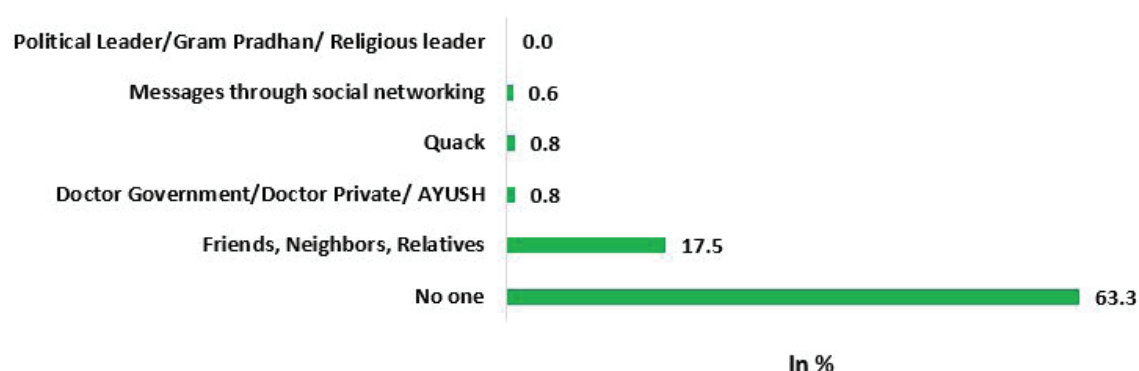
Negative stories regarding vaccination affect the perception and acceptance of vaccination in the mind of caregivers. Out of total, about 13.6% respondents had heard or read negative stories about vaccination.

On further investigation on the sources of negative information, it was reported that the primary source of negative information was from friends, neighbors and relatives (81.8%). Furthermore, mid media (1.5%), social media (1.5%) and quacks (1.5%) played minimal role in spreading such information. Noteworthy finding was that such information had been spread

through ANM, ASHA and AWW also in some cases (10.6%) (Figure 18). This clearly indicates the poor provider-beneficiary communication which led to miscommunication of information in few cases.

Prime influencer for no-vaccination:

The study also investigated on the person influencing the decision making for not to vaccinate their children. Majority of the respondents agreed that no one influenced them for not vaccinating their child (63.3%). However, friends, neighbors and relatives were reported as the main influencers for not to vaccinate their children (17.5%). While, other influencers had negligible role to play (Figure 19).

Figure 19: Sources of information for not to vaccinate the child

3.2.2 Agent or vaccine specific factors

A total of 81.2% of the children experienced side effects of vaccination either in the form of fever or swelling. Around 2.1% of the respondents did not know if their children had experienced any

such side effects after vaccination. Experience of side effects was more among passive and hesitant group (84.3% and 84.1%) as compared to active group (73.6%) (Table 3.2.2.1).

Table 3.2.2.1: Experience of side effects and perception towards services related to immunization

	Total (%) N=479	Active (%) N=111	Passive (%) N=262	Hesitant/ Refusal (%) N=106
Experienced side effects				
Yes	81.2	73.6	84.3	84.1
No	16.7	25.5	13.8	11.1
Don't know	2.1	0.9	1.9	4.8
Follow-up visit by ASHA after side effects				
Yes	68.4	53.1	73.3	75.5
No	31.6	46.9	26.7	24.5
After side effect, took the child for next vaccination				
Yes	71.3	70.4	83.4	31.4
No	28.7	29.6	16.6	68.6
ASHA/AWW/mobilizer pay a visit to the household to discuss immunization				
Yes	83.1	79.3	85.1	82.1
No	16.9	20.7	14.9	17.9
Feels immunization site is convenient				
Yes	97.9	99.1	99.1	92.2
No	2.1	0.9	0.9	7.8
Feels immunization timing is convenient				
Yes	99.5	99.1	100	98.4
No	0.5	0.9	0.0	1.6

Follow-up visit after reported vaccines' side effect cases is a mandatory activity of FLWs. It was found that the follow-up visit by ASHA was done in around 68.4% of the cases who experienced side effects of vaccination. However, no visits were made by ASHA in 31.6% of the cases. Follow-up visit by ASHA reported was more among passive (73.3%) and hesitant households (75.5%) in comparison with active households (53.1%). This also shows the efforts made by ASHA in dealing with problems faced by passive and hesitant groups in the community (Table 3.2.2.1).

Subsequent to the experience of side effects of vaccination, about 71.3% of respondents took their child for next vaccination which was observed highest among passive users (83.4%) followed by active (70.4%) and then hesitant (31.4%) (Table 3.2.2.1).

ASHA, AWW, and mobilizers are the key health activists in the community who are also responsible for generating awareness on health

issues. Around 83.1% of the respondents reported that the mobilizer visited their household to discuss about immunization. These visits were reported more from passive and hesitant households (85.1% and 82.1% respectively) as compared to active households (79.3%) (Table 3.2.2.1).

An ideal session site should be accessible, identifiable (IEC materials displayed), having adequate space to accommodate beneficiaries before (waiting area), during and after vaccination (observation area) with space for registration and recording. About 97.9% of the respondents felt that the immunization site was convenient. More than 99% of the respondents from the active and passive groups and 92.2% from the hesitant or refusal group reported that the site was convenient for their child's vaccination (Table 3.2.2.1).

Delivery of four key messages:

Out of the total respondents, who visited the immunization session for any vaccination, only 53.9% received any of the four key messages.

Around 40.9% did not receive any of the messages and only 5.2% received all four key messages. In the active group, 33.3% of the respondents did not receive any message, 61.3% reported to have received few messages and only 5.4% received all the key messages. Similarly, only 7.3% of the respondents in the passive group reported receiving all the four key messages, whereas, 58% received any message

and 34.7% did not receive any message. No one in the hesitant or refusal group reported receiving all the four messages. Around 64.2% did not receive any of the messages and 35.8% received any message in the hesitant or refusal group. This shows the need for reemphasis on the way of delivering four key messages to all the people in the community (Table 3.2.2.2).

Table 3.2.2.2: Reception on four key messages related to immunization

	Total (%) N=479	Active (%) N=111	Passive (%) N=262	Hesitant/ Refusal (%) N=106
Received four key messages				
No message received	40.9	33.3	34.7	64.2
Any message received	53.9	61.3	58.0	35.8
All four messages received	5.2	5.4	7.3	0.0

Sources of information on immunization:

Almost 97.1% of the respondents reported that the source of information on immunization was the frontline workers (ANM/ASHA/AWW). The other sources of information were friends, neighbours and relatives as reported by 9.2% respondents followed by Government and private doctor in 5.2% of the respondents. Mass media (2.1%), mid media (0.6%) and

social media (0.4%) were the other sources of information on immunization (Figure 20). It is noteworthy that none of the respondents received information from political leaders and Gram Pradhan. Around 71.2% of the respondents followed the advice given by the ANM/ASHA on RI. A quarter (23.6%) reported to follow the advice from the neighbours and relatives followed by 5.4% by doctors (Figure 21).

Figure 20: Sources of information on routine immunization

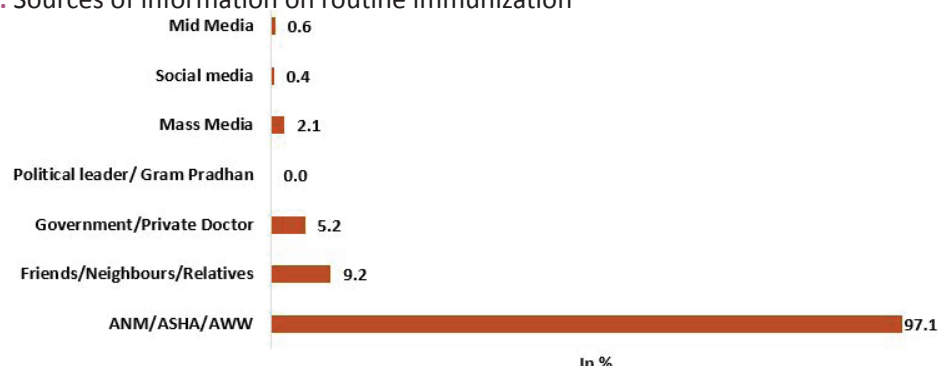
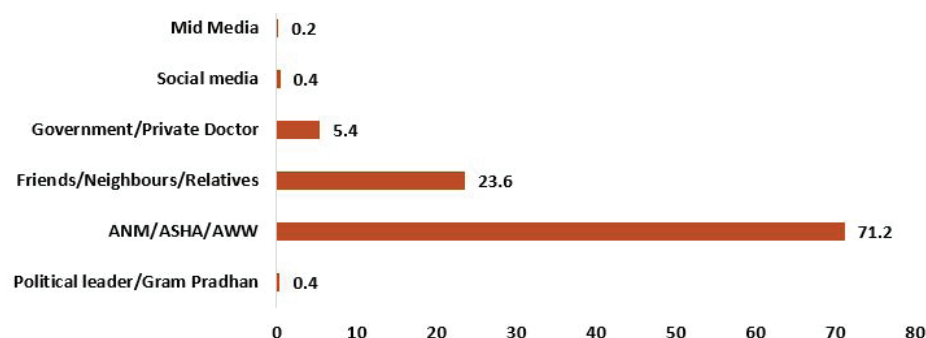


Figure 21: Advice followed for child's immunization



3.2.3. Environmental or external factors

Patient-health professional relationship:

Positive interaction is the keystone in maintaining confidence regarding vaccination. The personal attitude of health care providers, along with their knowledge determines how effectively they will recommend a vaccine to their patients. In the study area, only 21.1% of

the primary caregivers have attended mothers meeting on immunization organized by the FLWs and 37.1% were still not aware of any such meetings. In the vaccine-hesitant group the attendance rate was lowest i.e., only 10.4% in comparison to active and passive groups (24%) (Table 3.2.3.1).

Table 3.2.3.1: Mother's meeting on immunization

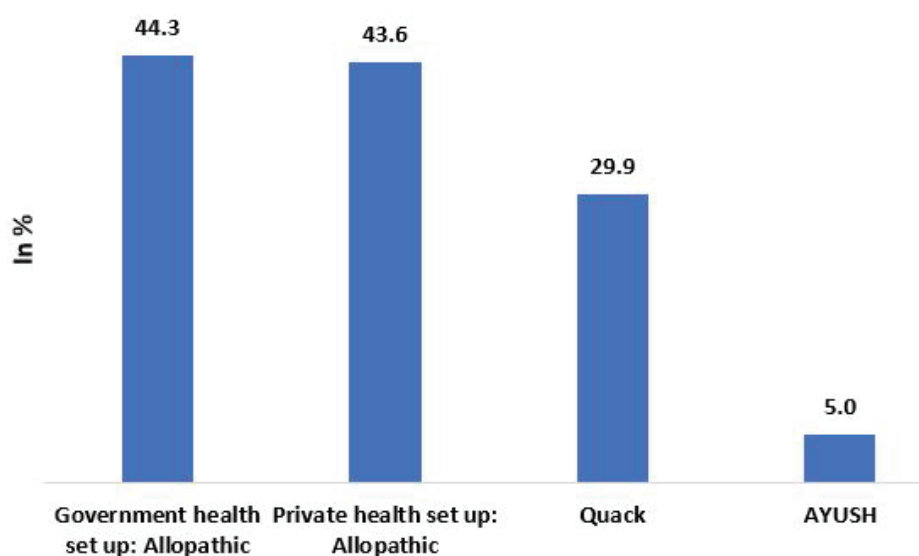
Attended Mother's meeting on immunization	Total (%) N=479	Active (%) N=111	Passive (%) N=262	Hesitant/ Refusal (%) N=106
Yes	21.1	24.3	24.1	10.4
No	41.8	49.6	39.3	39.6
Don't Know	37.1	26.1	36.6	50.0

Preference for health care service providers:

Although more than 44% of the households preferred Government or private health set up for medical care, still, there were few

households that preferred informal (29.9%) and alternative medicine for prevention (5%) (Figure 22).

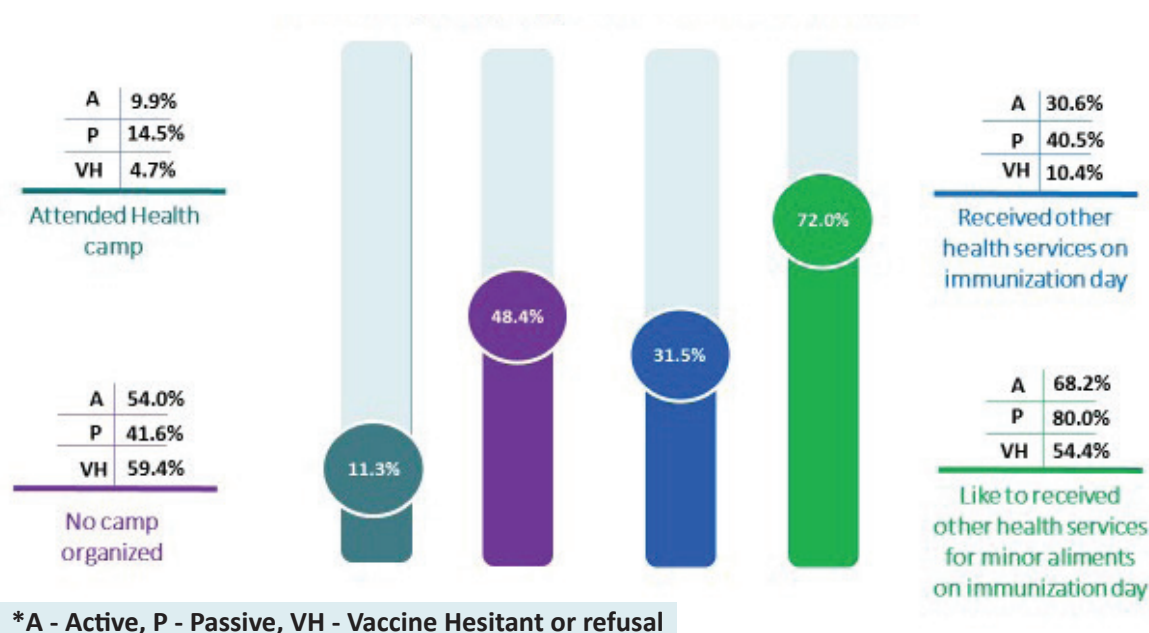
Figure 22: Preferred health care provider for general health issues



Health camp and other health services:

In the study area, only 11.3% households had reported attending any health camp and about 48% of them reported that no health camp was organized in the study area. Respondents who have reported of receiving other health services on the immunization

day was 31.5%. Respondents showed greater interest in receiving other health services for minor ailments on immunization day (72%). This interest was shown by 68.2% of active, 80% of passive and 54.4% of vaccine-hesitant households (Figure 23).

Figure 23: Information on health camp and other health services**Immunization Synergism:**

Immunization activities can be integrated with other ongoing or planned health and nutrition service delivery programmes. Services like distribution of ORS/Zinc packets, Vitamin A and Poshahar on immunization day can be a motivating factor for the beneficiaries to attend immunization session. Therefore, information on these were also collected in the study. It was

reported that only 27.4% of the households received ORS and Zinc supplements; 18.2% of the households have received Vitamin-A supplement and 43.8% of the households have received Poshahar on the immunization day (Table 3.2.3.2). It was also reported by FLWs during informal interaction that attendance on the day of immunization increases if supplementary items are distributed on the immunization day.

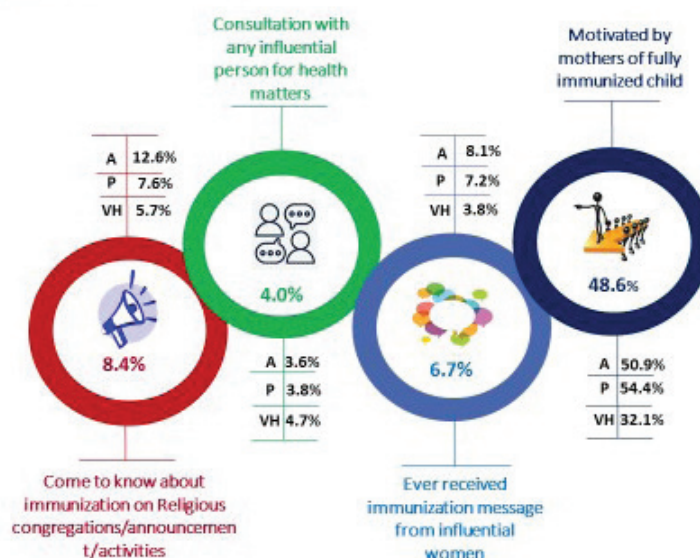
Table 3.2.3.2: Services received apart from immunization on immunization day

Services received apart from immunization on immunization day	Total (%) N=479	Active (%) N=111	Passive (%) N=262	Hesitant/ Refusal (%) N=106
ORS/Zinc	27.4	28.8	34.4	8.5
Vitamin A	18.2	12.6	26.0	4.7
Poshahar	43.8	44.6	46.2	37.0

Engaging with the community:

Community's involvement can improve the coverage and quality of immunization and health services. In Mewat, it was observed that association of vaccination activities with religious occasions or platforms was very less, only 8.4% of the households reported knowing about immunization through religious congregation or announcements. Similarly,

consultation with any influential person apart from health workers for health matters was also minimal (4.0%). Further, 48.6% of the primary care givers reported to get motivated through the mothers of fully immunized children. This percentage was more than half in the active and passive households and about one-third in the vaccine-hesitant households (Figure 24).

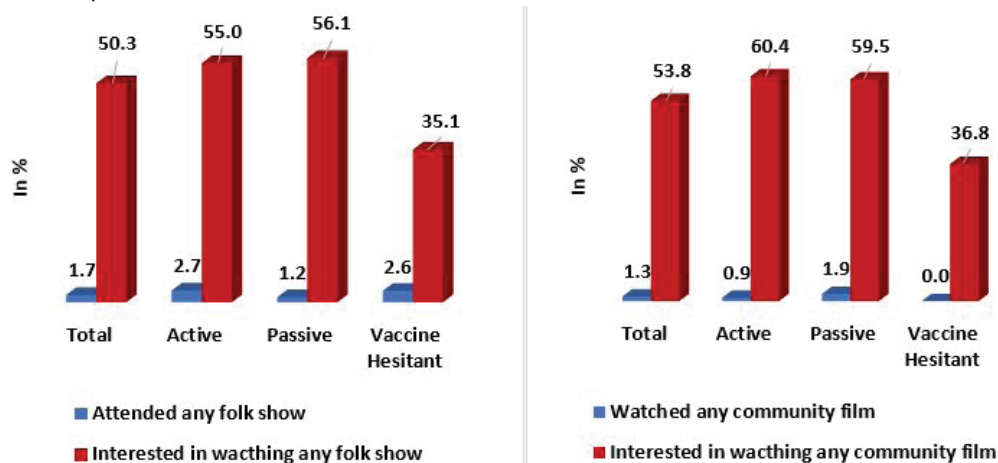
Figure 24: Quality of immunization services received

*A - Active, P - Passive, VH - Vaccine Hesitant or refusal

Mid Media Activities:

Media plays a significant role in vaccine uptake and influences the community both positively and negatively¹². Activities in community such as films or folk shows can be an effective tool in media dark areas with participation

of community and their leaders. Most respondents in Mewat have not seen any folk show or community film on immunization. However, more than half expressed their interest to watch similar mid media activities if given a chance (Figure 25).

Figure 25: Responses on Mid Media activities

With growing recognition of the utility of mobile technology to improve health communication, interventions related to mobile phones might be useful to improve vaccine coverage. In the study area, 94.4% of the households had mobile phones. However, only about 15.2% primary

caregivers had their personal mobile phones and 30.7% reported sharing accessibility to phones with family members. The presence of television was not much; only 33% households had television (Table 3.2.3.3).

Table 3.2.3.3: Availability of computer, mobile phone, television, radio and type of mobile users

Presence of Computer	Total (%) N=479	Active (%) N=111	Passive (%) N=262	Hesitant/ Refusal (%) N=106
Yes	6.9	10.8	6.9	2.8
No	93.1	89.2	93.1	97.2
Mobile Phone				
Yes	94.4	98.2	93.9	91.5
No	5.6	1.8	6.1	8.5
Television				
Yes	33.0	40.5	37.8	13.2
No	67.0	59.5	62.2	86.8
Radio				
Yes	12.3	11.7	14.1	8.5
No	87.7	88.3	85.9	91.5
Mobile Phone Users				
No Mobile Phone	5.6	1.8	6.1	8.5
Primary Caregiver	15.3	13.6	17.9	10.3
Other Family Member	48.4	43.2	48.5	53.8
Both	30.7	41.4	27.5	27.4

Non-financial incentives:

Incentives can effectively turn an inconvenient task into a worthwhile activity, dramatically increasing uptake of a service. In our study area, more than half (51.6%) of the households said that they would be motivated if rewards or recognition were given on achieving FIC. It was reported highest among the active

group (60.4%) followed by passive (56.5%) and hesitant group (30.2%). Whereas, more than half of the hesitant group were unsure if they will get motivated to vaccinate their child through rewards or recognition. Only 8.4% households reported knowing any person who had received recognition on FIC (Table 3.2.3.4). This shows non-financial incentives can have effect mostly on passive group.

Table 3.2.3.4: Perception about non-financial incentives

Will be motivated if received recognition on FIC	Total (%) N=479	Active (%) N=111	Passive (%) N=262	Hesitant/ Refusal (%) N=106
Yes	51.6	60.4	56.5	30.2
No	12.8	9.9	11.6	18.9
Don't Know	35.6	29.7	31.9	50.9
Knows any person who has received recognition on FIC				
Yes	8.4	8.1	10.0	4.7
No	91.6	91.9	90.0	95.3

3.3 Qualitative study findings**3.3.1 Results from field**

The level of resistance against vaccines varies across geographies, socio-economic strata and time. Interestingly, we found that the

vaccine hesitancy was not just confined to the caregivers alone; it was also found among some of the frontline health workers, responsible for mobilizing the caregivers and delivering vaccine services in the community. Below are

the detailed qualitative findings which emerged from the key informant interviews.

Community profile

- Education: Interest for formal education (school-based) was found limited. The majority of the population is illiterate and the women's illiteracy is highest among Muslims. Religious institutions were found to be the preferred medium of education for the community, primarily attended by boys.
- Employment: Most of the mothers or caregivers were not working or employed. By and large, male members were the source of income.
- Family Size: The perception that children are the "gift of God", contributed to large family size in the community. Some of the interviewed families had more than 10 children each.
- Women empowerment: Women were not allowed formal education or to work outside. There were restrictions to visit markets, nearby places without permission from the elders in family, mainly husband or father-in-law.
- Health-seeking behavior: Since most children were born at home, coverage of birth dose was low. Reasons cited were disturbance to household chores, reluctance to accompany the pregnant women to the hospital and out-of-pocket expenditure.

"There is reluctance towards immunization and not hesitancy. The community does not believe in immunization in the first place." SMO, WHO, Mewat

3.3.1.1 Host or parental specific factors

Skewed gender parity:

- Preference for a male child resulted in large family size, high immunization dropouts among girls, poor nutrition and limited decision-making rights among women and girls was observed.

"If the political leaders talk to the males (fathers, grandfathers), mobilization will take a better shape which in turn might encourage and support their wives, daughter-in-laws to immunize their children." DIPRO, Mewat

"There is need for greater engagement of men from the community and sensitization of fathers, husbands on the rights of women and children (including immunization and health) as a key determinant to support coverage interventions in the district." SMO, WHO

- While respondents informed that joint decisions were taken if the child was ill, however, decision making for day-to-day affairs such as household decisions, education, mobility and preferred medium of health care for deliveries were taken by men and elder family members.

Source of negative information:

- Most respondents quoted receiving negative information related to immunization through friends, neighbors and relatives. In addition, misinformation and rumors circulated through various media (newspapers and social media) during the recent MR campaign had added to the communities' concerns related to immunization
- A few respondents quoted receiving negative information related to immunization from FLWs, which discouraged families from opting for the same. This noteworthy finding requires a more-in-depth assessment of community – FLW interphase and counseling capacities of healthcare providers in hesitant and high risk areas.

Beliefs of parents:

- Few respondents quoted that natural immunity is better for their children than immunity acquired through immunization.
- Most parents of unimmunized children believed that since they had never received any vaccination during their childhood and lived a healthy life, there was no reason for their children to be immunized.
- Few respondents cited examples of ASHAs who refused to vaccinate their own children, which further contributed to their lack of trust in vaccination.

Poor disease memory:

- Most parents did not view immunization as an essential health measure to protect children from VPDs.

- ✎ In the absence of recent outbreak history, especially for Diphtheria or Tetanus and Measles, parents believed their children are at minimal risk of contracting them.

3.3.1.2 Agent or vaccine specific factors

Fear of side effect of immunization:

- ✎ The fear of discomfort, fever, inflammation and subsequent suffering related to the vaccination was cited as a critical reason for dropouts or unimmunized children.
- ✎ Most dropouts were after the first dose of Pentavalent vaccine. The respondents cited the fear of aforementioned events from the previous experience of child vaccination either from neighborhood or within family.
- ✎ There was widespread belief that administration of multiple vaccines at the same time may lead to severe side effects.

"There is difficulty in mobilizing the community due to fear of vaccines. There is resistance in the community because of the fear that vaccines will make their child infertile. Involvement of fathers or other male members of the family in immunization activities is minimal. Religious leaders do not encourage the community much to go for and support immunization." AWW, Mewat.

Competencies of FLWs on immunization:

- ✎ A meagre recall value for the four key messages by ASHAs was observed. This further raised concern regarding the counseling capacities of FLWs.

3.3.1.3 Environmental or external factors

Exposure to media:

- ✎ Television and radio were not found in most households, while mobile penetration and use (primarily by men) were found to be high. The reasons assessed were not linked to the community's economic strength, rather the apprehension towards exposure caused through television.
- ✎ Community engagement interventions such as nukkad natak were discouraged due to their cultural beliefs.

Access to modes of information:

- ✎ Most women cited that they never attended any mothers' meetings; however, women from the community and FLWs cited

mothers meetings as a potential platform to inform and promote positive behaviors related to immunization.

- ✎ Community and religious leaders were not involved in propagation of information regarding immunization and healthcare.

"IPC activities like mothers' meetings and household visits can have a better influence." - ASHA, Mewat

Other factors affecting immunization:

- ✎ Expectations of families from the Government to provide monetary support as there are not enough employment opportunities available.
- ✎ Cash incentives are expected by the families, especially the Muslim families.
- ✎ "Mothers were encouraged to vaccinate their children by linking it with the provision of birth certificates and Aadhaar cards for the immunized child"- Ferozpur Jhirka.

Understanding the factors that caregivers in this community consider while deciding whether or not to vaccinate a child can help in reducing vaccine hesitancy and increase vaccination uptake.

3.3.2 Results from nexus meeting

In order to improve low immunization coverage in Mewat, all the three groups deliberated upon the determinants and the potential Mewat-specific strategies to address the same. All the participants acknowledged the barriers caused by the cultural belief, the patriarchal orientation of the household and fear of after-effects due to the vaccination. Many of them also pointed out the weakness in the immunization delivery system and the lack of resources. Further, FLWs also raised concern about the absence of appropriate promotional activities. Educating the public and building trust in the immunization system have emerged as the central concept to bring the desired change in the vaccine coverage.

The themes which emerged during the nexus planning meeting, from three groups are as follows:

- ✎ Engagement with political and religious leaders

- Involvement of husband and male member in the family
- Improvement in promotional activities
- Educate parents and empower mothers to generate demand for vaccination
- Inter-departmental integration of activities
- Improve mobilization strategies
- Strengthen the vaccination service delivery system

3.3.2.1 Engagement with political and religious leaders

All the participants mentioned the importance of endorsement by the leaders of faith-based organizations and political parties for the vaccination. Many of them shared their experience on how the endorsement through mosques helped them to achieve high coverage during the MR campaign.

"We go to the religious leaders when there is an urgency and then discontinue after that. This should not happen; we should make them an active part of the immunization programme. This way, the impact will be long-lasting and we can achieve our goal." District coordinator, Mewat

It was also repeatedly stated by all the participants to take the religious leaders into confidence and to announce the vaccine schedules by them to address the cultural barriers and improve the acceptance of the vaccine among the community.

Further, the emphasis was not only on engaging with the religious leaders but also to sustain the relationship, so that a long-term improvement can be brought to the immunization uptake.

Similarly, the involvement of Sarpanch, Pradhan and other influencers was said to yield better results as far as the acceptance of the vaccine is concerned. Therefore, strategizing the involvement of key influencers in the community was pressed upon to improve immunization coverage and address hesitancy.

"Key community persons should be involved in the programme as the villagers tend to be more responsive toward them." ANM, Mewat

"People think that these vaccines are meant to make their children infertile to control the population.

Therefore, trust has to be built among the community. Either a group needs to be created involving key influencers of the village, or an expert from outside community can help to tackle the vaccine hesitant groups." - ASHA, Mewat

Suggested activities:

- The orientation of religious leaders by a core team preferably consisting of DIO, Sarpanch, Surveillance Medical Officer.
- Involve religious leaders in the immunization programme (by inviting them to talk shows or asking them to share their experiences) and sustain the communication with these religious leaders.
- Issuance of the joint statements on immunization by religious leaders.
- Public speeches by religious leaders, who support the immunization programme.
- Convergence meeting of service providers, religious leaders and faith-based leaders.

3.3.2.2 Involvement of husband and male member in the family

All the participants recognized that Mewat, being a highly patriarchal society, needs intervention tailored towards the husbands- the prime-decision-maker of the household. Many ASHA and mobilizers shared their experience of failure in mobilizing the beneficiary only because the husband was absent and the caregiver or mother was hesitant to make a decision alone.

"When we ask them to come for the immunization, they say that their husband is out of the village and we will not vaccinate without his permission." ASHA, Mewat

Few also shared that they were able to successfully mobilize the beneficiaries by reaching out to the father through mobile and emphasized that intervention should be done to educate and involve the husbands during immunization for a better coverage outcome.

"In many cases, when the mother refuses because the father is not there, we have achieved success in mobilizing by contacting the father and tell him about the vaccination." Mobilizer, partner agency

Suggested activities:

- IEC activities at Ratri chaupal, kirana shops, Dhaba and barber's shop to be conducted on a regular basis.

- Post-namaaz on Friday, sensitization sessions and advocacy for immunization and other health programmes such as family planning.
- Using Gram Sabha as a platform to disseminate information on immunization sessions targeting males.
- Identifying male vaccine ambassadors such as fathers, newly-wed males and youth, train them and ensure their engagement through incentives.
- Reach out to the husbands or male members during mobilization on the session day for increased participation.

3.3.2.3 Improvement in promotional activities

Most of the field level workers mentioned concern with the meagre promotional activities to encourage immunization. They compared it with other preventive measures such as “Swachhata Abhiyan.” Participants stressed the non-existence of permanent paintings on the walls, unlike other campaigns.

“There is not a single painting regarding vaccine or immunization schedule in our village. How will the community understand the importance of vaccination? There should be permanent wall-paintings depicting the complete schedule of vaccination to generate awareness.” ANM, Mewat

Mobile phones, available in large proportion, was regarded as a highly-potential medium to deliver the vaccine related communication and at the same time drawing their attention towards the facts and myths of immunization.

“Everyone has a mobile and we can reach everyone through it. We can create WhatsApp groups and create pictures and videos to promote vaccination. This way, it will be easily perceived by the people.” Block coordinator, partner agency

Further, many of the participants also advocated about the retention, even scaling, of “Khusi express” in Mewat, which delivers visual IECs and street plays in communities. Simple visuals, street acts and mike announcements before immunization day were preferred as they appeal to all, even illiterate populations.

Furthermore, IEC activities targeted towards adolescents, the future parents, were also emphasized as a strategic step to improve the

overall health education, which will definitely have a trickle-down effect on the vaccine coverage.

Suggested activities:

- Use of communication materials in local language suiting the socio-cultural flavor of the community and pictorial BCC materials for illiterate population.
- Engagement of students and teachers for creating awareness and mobilization of community for immunization sessions.
- Mike announcement in the community about the immunization activities and its’ benefits.
- Enhance display of IEC materials at RI sessions and prominent places (mosque, community halls, schools, market places and bus stands).
- Display of images of the vaccine preventable diseases to create awareness.
- Orientation of journalists at the district and block level.
- Utilize Social-media groups for disseminating video testimonials, case studies, experience of parents who lost their child due to VPD and vaccine information.
- Permanent wall paintings on immunization (both in Urdu and Hindi).
- Outreach to the communities through mobile IEC vans with community video shows and subsequent FAQ sessions.
- Formation of a specific communication resource team, including social media managers.
- Integrate immunization related information into the Government’s existing helpline.

3.3.2.4 Educate parents and empower mothers to generate demand for vaccination

All the participants agreed that there are lots of misconceptions in the community about the vaccine. Many of them recalled that people think vaccination leads to infertility. This kind of misconceptions have plagued the mind of parents and gave them enough rationale to refuse, outright, for any vaccination or drop as soon as they experience any symptoms

following immunization. Therefore, it was stressed that programmes should be launched to educate the parents about the benefits of vaccination and the risks associated with non-vaccination.

"They think vaccination will make their child infertile." ASHA, Mewat

"The family should be educated about the vaccines." ANM, Mewat

Along with empowering the family, the necessity of empowerment of mothers was also put forth by some participants. They repeatedly acknowledged the role of the mother in building a healthy society and the need to bring gender equity, at least in terms of health-related decision making.

"The mothers should be educated to take at least the health-related decision on their own." ANM, Mewat

Suggested activities:

- Garner support of influential mothers from society.
- Experience sharing by parents who have fully immunized their children
- Role play by the Anganwadi workers in mothers' meeting.
- Formation and training of small groups within the community for the purpose of community empowerment.
- Make mothers meeting more engaging by providing refreshment and rewards for full immunization.

3.3.2.5 Inter-departmental integration of immunization activities

Most of the frontline workers pointed out the lack of coordination between different departments, such as WCD, Education department and Panchayati Raj, during delivery of services, which impacts the vaccine coverage adversely. Therefore, it was stressed that roles and responsibilities be fixed for each department and performance based incentives be prescribed for FLWs.

"We alone are not able to mobilize all the beneficiaries. Where there are mobilizers, it is well and good, but in other places it becomes difficult for us to take help from Anganwadi helpers as they don't get any incentives. They should be given incentives and then

they will also work responsibly." ASHA, Mewat

Suggested activities:

- Fix roles and responsibilities of departments -WCD, Health and Panchayati Raj- to carry out the immunization activities.
- Orientation of Gram Panchayat and Gram Sabha on creating an enabling environment for immunization.
- Ensuring inter-departmental integration of activities by district-level officials.

3.3.2.6 Improve mobilization strategies

It was pointed by the partners that the mobilization techniques need to be revisited. The current mobilization technique is unable to connect with people and thus failing to win their trust and catch their attention. Currently, ASHAs just call upon the mothers to come for immunization on the next day. They neither interact with the family members nor inform the parents about the specific vaccines the child is due for and the associated risks and benefits. It was also emphasized that multiple ways of mobilization be employed for particularly the high-risk communities.

"It is not sufficient to just say that 'Come next day for your child's immunization.' The family has to be informed about the specific vaccines. Then, it would be more effective." Mobilizer, Mewat

Suggested activities:

- Conducting parents' meetings for the due beneficiaries just before the day of immunization.
- Mosque announcement before and on the day of Immunization.
- Family members and decision-makers also needs to be targeted as part of the IEC and BCC activities.
- Contacting fathers or males over the phone, if they are not available during house visits.

3.3.2.7 Strengthening the vaccination service delivery system

It was unanimously acknowledged that the immunization delivery system needs to be revamped in order to bring a sustainable improvement in vaccine uptake. Lack of human resource and knowledge or skill gap among the

FLWs were identified as the key constraints for the quality of service delivery.

"Previously, no one wanted to be ASHA and so Dais were appointed as ASHAs. Now they are old and don't have any retirement policy. On top of that, we have now been involved in all the programmes such as Malaria, Diarrhoea and vaccination." ASHA, Mewat

"Health service providers are overburdened. Increasing resources will improve the quality of service delivery." District coordinator, partner agency

Many participants emphasized active follow up of immunized children to keep the misconceptions about side effects at bay and make the community feel safe and cared after the immunization.

Many participants suggested a robust inter-departmental monitoring system to increase accountability and improve the quality of services.

"Sarpanch and Pradhans should be engaged in monitoring the services provided at the session site, especially while delivering the four key messages to the beneficiaries." BPO, Mewat

Further, it was stressed that financial and non-financial incentives to be introduced for the beneficiaries and stakeholders, which will lead to greater involvement of stakeholders and better uptake of vaccination by the beneficiaries.

"Panchayati Raj department should be engaged for social mobilization and to tackle vaccine hesitant group. Some rewards or incentives can be introduced to encourage the participation of Panchayats. ASHA, Mewat

"Poshahar should be delivered at the immunization site in all sessions.

Suggested activities:

- Head count survey should be conducted timely to prepare micro plans, develop and update due lists for session sites.
- Increase the ASHA facilitators' strength to one per 10 ASHAs instead of 20 ASHAs.
- Address the burden of FLWs – engage volunteers and students for help
- Ensure rational distribution of workload among the ANMs
- Ensure regular follow-up by ASHAs after immunization.
- Refresher trainings of ASHAs and AWWs to prepare appropriate duelist, to address the cases informing side effect, to mobilize the high-risk population and proper use of IEC and BCC materials.
- Undertake post-training assessment at regular interval of FLWs
- Introduce reward or recognition mechanism anchored by the Gram Panchayat or Gram Sabha: Acknowledging vaccine advocates from the community
- Poshahar should be available during immunization sessions and its distribution should be ensured.
- Provide financial or non-financial incentives for the villages achieving more than 90% full immunization coverage.



CHAPTER 4:

CONCLUSIONS AND

RECOMMENDATIONS

CONCLUSIONS AND RECOMMENDATIONS

4.1. Conclusions

This study was carried out in Mewat with a mixed method approach to understand the determinants of vaccine hesitancy in the community. Results of the quantitative findings showed that around one-fifth (19.6%) of the children had not received any vaccination and the most common reason for no immunization was found to be the fear of side effects of vaccines (35%). Further, the households were divided into four vaccine user type categories depending upon their attitude related to vaccination. Overall, 54.7% of the households were passive vaccine users, 23.2% were active vaccine users, 16.1% were vaccine-hesitant and 6% were in vaccine refusal category. Qualitative findings showed that religious beliefs of parents or caregivers also encourage not to immunize their children. Furthermore, households who have refused immunization altogether cited fear of side effects such as high fever and infertility as the main reasons.

A spectrum of approaches was proposed to address the above-mentioned challenges in the nexus meeting. The proposed strategies were multidimensional and tailored according to different sections of the community to address the issues related to vaccine hesitancy. We followed a host-agent-environment driven framework to suggest goal, activity and monitoring parameters for an effective solution.

4.2. Recommendations

Based on the study findings and the discussion from the nexus meeting, recommended domain specific strategies for intervention are as follows:

1. Host or parental factors:

Many public health interventions have been based on a “knowledge-deficit” approach to promote vaccination assuming that vaccine-hesitant individuals would change if given the proper information. Educated parents are more likely to remember dates, understand the importance of timely vaccination and interact more freely with health workers. Frequent mothers’ meetings can be a useful mode for the engagement of the community and it can be a platform for experience sharing. After vaccination, the message regarding probable side effects needs to be conveyed in the following manner which will address the fear of vaccines:

“After the vaccination, the child may have fever, local pain, swelling, irritation and may cry. He may eat/feed less and could experience one or two episode of vomiting. But this will be for only 1-2 days following vaccination. Paracetamol will relieve the fever and the pain. If anything serious happen, call us or go to the nearest health center. It is important to give the child subsequent vaccine doses for the vaccine to be completely effective. A few hours of discomfort will give the child lifelong immunity against dangerous diseases.”

Women respondents have quoted jointly taking decision with husband if the child was ill. Decisions related to day-to-day affairs – i.e., household decisions, education, mobility and preferred medium of health care for deliveries were taken by men in the family, especially when it involves spending money. Therefore, greater engagement and sensitization of

husband, father-in-law on health seeking decisions (including immunization and health in general) is required to increase immunization coverage. Incentives such as the provision of food and nutrition supplements, other goods and certificates of recognition can result in an improvement in immunization uptake.

Specific recommendations:

- **Increase knowledge on vaccine preventable diseases:** This can be done through permanent wall paintings on immunization and conducting meetings in the community for positive experience sharing of parents who have fully immunized their children.
- **Building trust in health care providers:** This can be done by creating small groups within the community and train them for the purpose of community empowerment. Increase participation of parents in mothers meetings can also help to build trust in the health system.
- **Awareness generation on immunization and its benefits:** To generate awareness, IEC activities can be conducted at places where community gathering is higher. Use of social-media platforms such as Facebook and Whatsapp also has to be utilized to disseminate information and remove misconceptions.
- **Sensitization of males of the community and increase their involvement in health seeking behaviors:** Mosques can be used as a platform to sensitize and advocate the males on immunization and family planning post Friday namaaz. Gram Sabha can also be used to disseminate information on immunization sessions targeting males.

2. Agent or vaccine specific factors

Information regarding the vaccines is often not adequately disseminated resulting in apprehension and fear about newer vaccines. It might have refrained the families from getting the children vaccinated. Our study has reported that 81.2% households have experienced some symptom after immunization. It is of utmost important to address these cases to gain the confidence of the parents. Counseling capacity of FLWs on the importance of

vaccines is also necessary. This is particularly effective at providing cues to action when parents are unfamiliar with changes in vaccine recommendations. Service delivery interventions like increasing the number of ASHA facilitator and compulsory follow ups by ASHAs were identified to increase vaccination uptake.

Specific recommendations:

- **Increase knowledge and skill of FLWs:** Refresher trainings for FLWs on how to address the cases reporting side effects and make them efficient for proper use of IEC and BCC materials is required.
- **Adequate response to side effects of vaccination:** Ensuring follow up visits and provision of adequate treatments to the household reporting side effect by the community health workers and volunteers will improve the acceptance and utilization of immunization services.

3. Environmental or external factors

Community health awareness campaign through health workers, mobilizers, medical officers, prominent religious leaders and influential person from the community for knowledge and experience sharing can improve immunization coverage. The involvement of religious and political leaders for orientation and sustained communication with the vaccine-hesitant families will be useful.

The use of mid-media activities to target groups with low awareness of health services can be effective. Immunization reminder-calls are also recommended as a way to increase immunization uptake. Further, for promoting and improving the quality of immunization services, inter-departmental integration of various immunization activities has to be ensured.

Specific recommendations:

- **Involvement of influencers:** Involvement of religious and political leaders, for immunization promotional activities will be helpful for improving immunization coverage.

➤ **Vaccination promoting activities:** Mid-media and social-media activities can be utilized as a platform for vaccination promotion. Experience sharing videos of parents who have lost their child due to VPD and educational videos can be prepared and circulated in the community for awareness generation.

➤ **Increase inter-departmental activity integration:** Roles and responsibilities of

departments -WCD, Health, Education and Panchayati Raj- should be outlined for the immunization activities.

4.3 Logic framework to address vaccine hesitancy

A detailed outline of factors affecting the current issues, suggested strategies to bring change and their monitoring indicators have been depicted in the below given log frame:

Identified issues	Recommended strategies	Monitoring indicators	Rationale	Output	Outcome
Host factors					
Low-risk perceptions for VPDs	Experience sharing by parents who have fully immunized their children	Number of mothers' meetings held	Will minimize knowledge and attitude-based (e.g., lack of awareness) barriers associated with accessing immunization services, making consumers more likely to engage in preventive health measures	Increased acceptance among the passive and hesitant population	Improved proportion of full immunization among children aged 0-2 years
Low confidence in vaccination and its providers	Formation and training of small groups within the community for the purpose of community empowerment	Number of sessions held with the distribution of supplementary nutritious products		Increased peer pressure to immunize child for the sake of community health	
Lack of awareness on immunization and its benefits	IEC activities at Ratri chaupal, shops, Dhaba and barber's shop, targeting the decision-maker, to be conducted on regular basis.	Number of post-namaaz sensitization session held		Improved decision making among female on health-seeking behavior	Reduction in magnitude of vaccine hesitancy
Inappropriate health-seeking behaviors	The post-Friday namaaz, sensitization sessions and advocacy for immunization and other health programmes such as family planning.	Number of vaccine ambassadors deployed per block	Will aim to address individual/social group influence based determinants of hesitancy such as beliefs and attitudes about health and prevention Will also help to bring gender equity through empowerment		

Identified issues	Recommended strategies	Monitoring indicators	Rationale	Output	Outcome
Host factors					
Gender inequality in decision making	Using Gram Sabha as a platform to disseminate information on immunization sessions targeting males Identifying male vaccine ambassadors such as fathers, newly-wed males and youth, train them and ensure their engagement through incentives.				Improved proportion full immunization among children aged 0-2 years Reduction in magnitude of vaccine hesitancy
Agent factors					
Lack of knowledge about vaccination and side effect management among FLWs Poor quality of service delivery by FLWs	Refresher trainings of ASHAs and AWWs to prepare appropriate duelist, to address side effects following immunization, to mobilize the high-risk population and proper use of IEC and BCC materials Increase the ASHA facilitators' strength to one per 10 ASHAs instead of 20 ASHAs Periodical training to appropriately utilize the AEFI toolkit Ensure adequate information among FLWs for response to the side effect	Number of refresher training done quarterly	Will address the gap in service delivery caused by the knowledge and skill deficiency among the ASHAs and other FLWs	Improved service quality leads to satisfied community Increased demand for services	

Identified issues	Recommended strategies	Monitoring indicators	Rationale	Output	Outcome
Environmental factors					
Religious and cultural belief	Involvement, orientation and sustained communication with religious and political leaders by a core team preferably consisting of DIO, Sarpanch, SMO Issuance of joint statement and public speeches by religious and political leaders supporting immunization	Number of sensitization meetings held to involve religious and community leaders Number of orientation sessions held for religious leaders Number of public speeches conducted to motivate for immunization per Panchayat in a year	Will facilitate in addressing the socio-cultural barriers attached to immunization	Improved Socio-religious acceptance of Vaccine	
Lack of vaccination promoting activities Deficient parent provider communication	Use of communication materials in local language suiting the socio-cultural flavor of the community and pictorial BCC materials for illiterate population Advance mike announcement in the community about the immunization activities and benefits Enhance display of IEC materials at RI sessions and prominent places (mosque, community halls, schools, market places and bus stands)	Number of tailored IEC/BCC developed and displayed in a year Number of mike announcements done per month in an area Number of educational contents and messages disseminated through social media Number of street plays and visual IECs conducted in a block per year	Will address the gap in service delivery caused by the knowledge and skill deficiency among the ASHAs and other FLWs Will attempt to use a variety of communication and engagement channels and give attention to all aspects of community life that might influence vaccination decisions.	Improved service quality leads to satisfied beneficiary Increased demand for services	

Identified issues	Recommended strategies	Monitoring indicators	Rationale	Output	Outcome
Inadequate resources to deliver quality services	Utilize Social-media groups for disseminating video testimonials, case studies, experience of parents who lost their child due to VPD and vaccine information	Number of communication team positioned in a block	Will attempt to use a variety of communication and engagement channels and give attention to all aspects of community life that might influence vaccination decisions.	Improved service quality leads to satisfied beneficiary	Increased demand for services
	Display permanent wall paintings on immunization (both in Urdu and Hindi)				
Inadequate resources to deliver quality services	Outreach to the communities through mobile IEC vans with community video shows and subsequent FAQ sessions	Number of ASHA facilitator assigned per 10 ASHAs	Will target the lacunas with FLWs skill and education	Improved quality of immunization session	Increased demand for services
	Formation of specific communication resource team including social-media managers				
Inadequate resources to deliver quality services	Integrate immunization related information into the Government's existing helpline	Number of ASHA facilitator assigned per 10 ASHAs	Will target the lacunas with FLWs skill and education	Improved quality of immunization session	Increased demand for services
	Increase ASHA facilitators' strength from one facilitator per 20 ASHAs to 10 ASHAs				

Identified issues	Recommended strategies	Monitoring indicators	Rationale	Output	Outcome
Inadequate resources to deliver quality services	Streamline the workload of FLWs through synergizing other health programme activities with immunization activities and engage volunteers and students for help Ensure follow up by ASHAs after Pentavalent and DPT vaccination Provide financial or non-financial incentives for the Gram Sabha achieving more than 90% full immunization coverage	Number of follow-up visits after vaccination Number of Gram Sabha and wards received incentives for full immunization in a year	Will ensure smooth adherence to the guidelines and therefore, will restore the trust for the service providers among the population.	Increased efficiency of FLWs	
Lack of inter-departmental activity integration	Fix roles and responsibilities of departments -WCD, Health and Panchayati Raj- to carry out the immunization activities	Number of inter-departmental coordination meetings held	Will increase the stakeholder engagement and responsibility	More involvement of other stakeholders resulting in greater visibility and acceptance Better utilization of resources	

Identified issues	Recommended strategies	Monitoring indicators	Rationale	Output	Outcome
Ineffective mobilization practices	<p>Focus effective delivery of 4 key messages on the immunization day</p> <p>Mosque announcement before Immunization day</p> <p>Family members and decision-makers also needs to be targeted as part of the IEC and BCC activities</p> <p>Involvement of family members and decision-makers apart from mothers for immunization related communication</p> <p>Contacting fathers or male members over the phone, if they are not available during house visits</p>	<p>Number of meetings conducted before immunization sessions</p> <p>Number of session conducted to involve males in the immunization programme</p> <p>Number of mosque announcement done in a sub center area per month</p>	<p>Mobilization is critical to encourage passive and hesitant-household. This comprehensive mobilization strategy will increase the coverage by mobilizing the passive beneficiaries for immunization.</p>	Better turnout to immunization session	



CHAPTER 5:

REFERENCES

REFERENCES

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CHAPTER 6:

ANNEXURE

Annexure 1: Tool used for the vaccine hesitancy study

Objective: This questionnaire attempts to answer the following:

1. The extent of vaccine hesitancy
2. To understand the factors which affect vaccine hesitancy in a specific area
3. To identify the suitable strategy in each of the study area

Mother or Primary caregiver Questionnaire

Instruction: In a household, only one mother or primary caregiver of the child in the age group of 0-23 months will be interviewed. In case of two children in the age group of 0-23 months, please record information pertaining to the youngest child.

Mothers or caregivers, who are usual resident of the household and of age above or equal to 18 years of age on the date of survey must be interviewed. Please do not interview mothers or caregivers who are visitor to the household.

Please ensure that the respondent has agreed to be interviewed and understood the objective of this pilot. The participant information sheet (PIS) must be handed over to the interviewee and the informed consent form (ICF) has been signed by the interviewee.

Please record the start time before the onset of the interview

Start time:

Date of interview:

Verbal Consent: I agree to participate in the study and provide information about the health and immunization status of my child.

- a) YES b) NO

Section 1: Basic information of the study area

Q. No.	Questions	Coding	Skip to
1.1	Please select the name of the state (Select the name of the state)	Haryana	
1.2	Please select the name and code of the district (Select the name of the district)	Nuh	For respective states
1.3	Please select the type of area (Select the type of area)	1 Urban 2 Rural	
1.4	Please select the name of Village/ ward (Select a village in rural and ward in urban)		
1.5	Household number (having 0-2 years old child) (Based on house-listing In case of more than one child, please select the youngest child)		

Section 2: Demographic Details about Mother/primary caregiver

Q. No.	Questions	Coding	Skip to
2.1	What is your relationship with the child? (Primary Caregiver will be the person taking care of the child in case if mother is deceased or mother is away from home)	1. Mother of 0-2 years old child 2. Primary caregiver	If 1, skip to Q2.3
2.2	What is your relationship with the child? (Relationship of the respondent with the child)	1 Grandmother 2 Grandfather 3 Father 4 Aunt 5 Uncle 6 Others (specify).....	
2.3	What is your present age? (Enter the age in years)	In completed years	
2.4	What is your highest standard of formal education? (Ask about the educational status of the respondent)	1. No schooling 2. ≤ class fifth 3. ≤ class eighth 4. ≤ class twelfth 5. Graduate/Post-graduate completed 6. Other, (specify)-----	
2.5	Do you work currently anywhere for income generation? (Ask about the employment status of the respondent)	1. Yes, from home 2. Yes, outside the home 3. No income generating activity	If 3 then skip to 2.7
2.6	If yes, what kind of income generation activities you are involved in? (Ask about the income generation of the activity of the respondent)	1. Agriculture/fish breeding/poultry farming/animal rearing 2. Government job 3. Private job/other contractual worker 4. Self-employed /business/enterprise / industry/shop keeper 5. Daily wage laborer/ Domestic work 6. Skilled labor (mechanic/tailor/weaver) 7. Other(specify)	
2.7	How many living children does the mother/ caregiver has? (siblings of the index child including him/her) (Mention number of children the respondent has)	Enter the number	99 = does not know/not applicable
2.8	Where was the index child delivered? (Mention the place of delivery of the index child born in the family)	1. Government institution 2. Private institution 3. Home delivery 4. Don't know/other	
2.9	Whether your family (mother/caregiver of the child) has been living here for the past six months?	1. Yes 2. No	if 1 then skip to 2.11

Q. No.	Questions	Coding	Skip to
2.10	If no, total time period family has migrated to this place (Mention the time in months)	(in months)	
2.11	Does your husband work for income generation? (Ask about the employment of the husband)	1. Yes, from home 2. Yes, outside the home 3. No income generation activity	Applicable only if 2.1 is 1. Skip to 2.13 if 3
2.12	If yes, what kind of income generation activities your husband is involved in?	1. Agriculture/fish breeding/ poultry farming/animal rearing 2. Gov. job 3. Private jobs/ other contractual worker 4. Self-employed/ business/enterprise/ industry/shop keeper 5. Daily wage laborer/ Domestic work 6. Skilled labor (mechanic/tailor/weaver) 7. Others (specify)	
2.13	Marital status of primary caregiver? (Don't ask, please fill based on observation/previous replies) (Ask about the present marital status of respondent)	1. Currently Married 2. Widow 3. Divorced 4. Separated 5. Never Married 6. NA	

Section 3: Details of the child

Q. No.	Questions	Coding	Skip to
3.1	What is the age of the child (In completed months)?		
3.2	What is the date of birth? (Record from vaccination card/ recall. Write '44/44/4444' if date is not known)	DD/MM/YYYY	
3.3	What is the sex of the child? (If the option is 3, cross verify)	1. Male 2. Female 3. Other	
3.4	Do you have a card where immunization details are written down for this child? (If the child does not have a vaccination card but has any other valid document like a doctor's prescription slip, it can be considered as a vaccination card)	1. Yes 2. No	

Section 4: Immunization status of the child

4.1 Immunization	As per Immunization card/ any valid document like a doctor's prescription slip or letterhead or likewise		SOP	As per Recall (Applicable for the children who do not have a vaccina- tion card) Also applicable for children whose card is incomplete or date is not available in the card or date is incomplete/wrong)		SOP
	Observation from card	Date		Recall	Date	
4.1.A BCG (given on left arm or shoulder that usually leaves a scar)	4.1.B 1.Yes, date is avail- able 2. No, date is not written 3. Date is incom- plete/wrong	4.1.C DD/ MM/ YYYY	(1) Copy vaccination date for each vaccine from the card (2) If the card shows that vacci- nation was given, but no date is re- corded- write '44/44/4444'	4.1.D 1.Yes 2. No 3. Don't know	4.1.E DD/MM/YYYY	Try to remind the mother for each of the anti- gens by suggest- ing the site of adminis- tration
4.1.A BCG (given on left arm or shoulder that usually leaves a scar)	4.1.B 1.Yes, date is avail- able 2. No, date is not written 3. Date is incom- plete/wrong	4.1.C DD/ MM/ YYYY		4.1.D 1.Yes 2. No 3. Don't know	4.1.E DD/MM/YYYY	
4.2.A Pentavalent-1/ DPT-1 (given on as an injection on left thigh)	4.2.B 1.Yes, date is avail- able 2. No, date is not written 3. Date is incom- plete/wrong	4.2.C DD/ MM/ YYYY	(3) If only part of date is shown on card, record '99' or '9999' in the column for which information is not given. (4) If no information is available for a partic- ular vac- cine, please fill it with 88/88/8888	4.2.D 1.Yes 2. No 3. Don't know	4.2.E DD/MM/YYYY	Try to remind the mother for each of the anti- gens by suggest- ing the site of adminis- tration

4.3.A OPV-1 (given orally)	4.3.B 1.Yes, date is available 2. No, date is not written 3. Date is incomplete/wrong	4.3.C DD/ MM/ YYYY		4.3.D 1.Yes 2. No 3. Don't know	4.3.E DD/MM/YYYY	
4.4.A Pentavalent-2/ DPT-2 (given on as an injection on left thigh)	4.4.B 1.Yes, date is available 2. No, date is not written 3. Date is incomplete/wrong	4.4.C DD/ MM/ YYYY		4.4.D 1.Yes 2. No 3. Don't know	4.4.E DD/MM/YYYY	
4.5.A OPV-2 (given orally)	4.5.B 1.Yes, date is available 2. No, date is not written 3. Date is incomplete/wrong	4.5.C DD/ MM/ YYYY		4.5.D 1.Yes 2. No 3. Don't know	4.5.E DD/MM/YYYY	
4.6.A Pentavalent-3/DPT-3 (given on as an injection on left thigh)	4.6.B 1.Yes, date is available 2. No, date is not written 3. Date is incomplete/wrong	4.6.C DD/ MM/ YYYY		4.6.D 1.Yes 2. No 3. Don't know	4.6.E DD/MM/YYYY	
4.7.A OPV-3 (given orally)	4.7.B 1.Yes, date is available 2. No, date is not written 3. Date is incomplete/wrong	4.7.C DD/ MM/ YYYY		4.7.D 1.Yes 2. No 3. Don't know	4.7.E DD/MM/YYYY	
4.8.A MCV-1/ Measles-1/MR-1 (given as an injection in the right arm/shoulder)	4.8.B 1.Yes, date is available 2. No, date is not written 3. Date is incomplete/wrong	4.8.C DD/ MM/ YYYY		4.8.D 1.Yes 2. No 3. Don't know	4.8.E DD/MM/YYYY	
4.9 Immunization status of children	1. Full 2. Partial 3. No	Choose appropriate option using the algorithm.			If 1, skip 5.2, 5.3 and 5.7. If 2, skip 5.1 and 5.3. If 3, skip 5.1, 5.2, section 6 and section 8	

Section 5: Reasons for age-appropriate/ full/ partial /no immunizing child

5.1 Reasons for age-appropriate/ fully immunized child

Q. No.	Question	Coding	Skip to
5.1	<p>If the child has received all vaccinations, what are the important reasons?</p> <p><i>(Don't probe, please record what the respondent says.</i></p> <p><i>Multiple answers are possible)</i></p>	<ol style="list-style-type: none"> 1. I trust the health system and vaccines 2. Vaccine prevents the child from diseases. 3. Information was given by doctor/ASHA/ANM/AWW FLWs come and inform about the session 4. Self-motivation 5. Pursued by family members/someone else 6. Specify if any other..... 	

5.2: Reasons for partially immunized child

Q. No.	Question	Coding	Skip to
5.2	<p>The child has missed some of the vaccines, what are the important reasons?</p> <p><i>(Don't probe, please record what the respondent says.</i></p> <p><i>Multiple answers are possible)</i></p>	<ol style="list-style-type: none"> 1. Do not feel the need for immunization 2. Do not know what vaccines are needed and when 3. Do not know where to take the child for immunization 4. Do not have time/any support at home to take child for immunization 5. Time/cost/effort spent is not worthy for receiving immunization 6. Immunization site not convenient/too far 7. Immunization session timings not convenient 8. Cannot afford the cost 9. Loss of daily wages 10. The Child is a girl 11. Fear of side effects/Immunization is painful 12. Advised against immunization 13. The vaccine makes the child infertile 14. Doubt the quality of vaccines 15. Vaccine not available 16. ANM absent during visit/No immunization session held 17. Long waiting time/session site is always crowded 18. ANM/doctor did not administer the vaccine 19. The Child is not available/traveling 20. Sick child 21. Don't Know 22. Any Other Reason (Specify)..... 	

5.3: Reasons for no immunized child

Q. No.	Question	Coding	Skip to
5.3	<p>The child has not received any vaccinations, what are the important reasons?</p> <p><i>(Don't probe, please record what the respondent says.</i></p> <p><i>Multiple answers are possible)</i></p>	<ol style="list-style-type: none"> 1. Do not feel the need for immunization 2. Do not know what vaccines are needed and when 3. Do not know where to take the child for immunization 4. Do not have time/any support at home to take child for immunization 5. Time/cost/effort spent is not worthy for receiving immunization 6. Immunization site not convenient/too far 7. Immunization session timings not convenient 8. Cannot afford the cost 9. Loss of daily wages 10. The Child is a girl 11. Fear of side effects/Immunization is painful 12. Advised against immunization 13. The vaccine makes the child infertile 14. Doubt the quality of vaccines 15. Vaccine not available 16. ANM absent during visit/No immunization session held 17. Long waiting time/session site is always crowded 18. ANM/doctor did not administer the vaccine 19. The Child is not available/traveling 20. Sick child 21. Don't Know 22. Any Other Reason (Specify)..... 	

Please ask from all mothers/caretakers

Q. No.	Question	Coding	Skip to
5.4	Do you think that vaccination is important for a child's health?	1. Yes 2. No	If 2, skip Q 5.5 If 1, skip Q 5.6
5.5	Why do you think that vaccination is important for a child's health?	1. I trust the health system and vaccines 2. The Vaccine prevents the child from diseases 3. Information given by doctor/ASHA/ANM/AWW. FLWs come and inform about the session 4. Self-motivation 5. Pursued by family members/someone else 6. Specify if any other.....	
5.6	Why do you think that vaccination is not important for a child's health?	1. It has side effects 2. Makes a child infertile 3. No impact on a child's health 4. Someone advised so 5. Specify if any other.....	
5.7	Most of the time, who takes the child for vaccination?	1. Myself 2. Family members/relatives 3. Neighbors 4. ASHA/ANM/AWW 5. Someone else (Please specify)_____	Skip if 4.9 is 3
5.8	Do you know that when your child's next vaccination is due?	1. Yes 2. No/Don't Know	Not applicable if the child is in no immunization
5.9	Are you aware that where to go for immunization services?	1. Yes 2. No/Don't Know	
5.10	Have you ever refused any vaccine?	1. Yes, once 2. Yes, often (more than once, but not always) 3. Yes, always 4. Never	If 4, skip to section 6
5.11	If the respondent has refused any vaccine ever, does he/she accept it now?	1. Earlier refused, now accepted 2. Earlier accepted, now refused 3. Sometimes accepts, sometimes refuses 4. Currently refusing but willing to accept in the future	

Section 6: Immunization services

Q. No.	Question	Coding	Skip to
6.1	From where did the child receive most of his/her vaccines?	1. Government Health Facilities 2. Private Health Facilities 3. Outreach AWC 4. Other outreach areas 5. Mobile/health camps 6. Others (please specify)-----	
6.2	Which are the preferred sites for immunizing your child?	1. Government Health Facilities 2. Private Health Facilities 3. Outreach AWC 4. Other outreach areas 5. Mobile/health camps 6. Others (please specify)-----	
6.3	Is the present immunization session site convenient for you?	1. Yes 2. No	
6.4	Is the timing/day for immunization session convenient for you?	1. Yes 2. No 3. Not aware of immunization site	Skip to 6.6 if 1 or 3
6.5	If No, then what is the preferable time/day?	Please specify the time----- Please specify the day-----	Enter time in hours Enter days
6.6	Has the child had any adverse events like fever, rash etc. after any of the immunization?	1. Yes 2. No 3. Don't know	Skip to Q 6.9 if 2 or 3
6.7	If yes, did the ASHA visited your house?	1. Yes 2. No	
6.8	If the child suffered with adverse events, did you took your child for next vaccination?	1. Yes 2. No	
6.9	During any of your visits to immunization session did you receive the following messages/advices at least once? <i>Multiple choices allowed</i>	1. Which vaccines were given on that day and they prevent from which diseases? 2. Side-effects of vaccines and their management were explained 3. When and where to come for next immunization 4. Remember to bring card during next visit 5. Don't remember 6. Didn't receive any message/no time to discuss	

Section 7: Information regarding immunization

Q. No.	Question	Coding	Skip to
7.1	<p>From where/whom have you learnt about or got information on routine immunization?</p> <p><i>((Probe for each of the options. Record answer for all of them, multiple answers are possible))</i></p>	<ol style="list-style-type: none"> 1. Doctor Government/Doctor Private - Yes, No 2. Doctor – AYUSH Yes, No 3. Quack –Yes, No 4. ANM/ASHA/AWW- Yes, No 5. Friends/Neighbors/Relatives- Yes, No 6. Poster/Banner/Television/ Radio/ Newspaper/ print media - Yes, No 7. Social Media/Mobile/video- Yes, No 8. Street plays/ Folk shows/Drum beating/Miking etc. – Yes, No 9. Political Leader/Gram Pradhan/ Religious leader – Yes, No 10. Mothers meeting/Mahila Aarogya Samiti – Yes, No 11. School teachers/ Social worker – Yes, No 12. No information regarding immunization 13. Any other (Please specify)..... 	
7.2	<p>Have you ever heard or read negative stories or information about immunization?</p>	<ol style="list-style-type: none"> 1. Yes 2. No 	Skip to section 8 if 2
7.3	<p>From where you have heard the negative stories/ rumors?</p> <p><i>(Probe for each of the options. Record answer for all of them, multiple answers are possible)</i></p>	<ol style="list-style-type: none"> 1. Doctor Government/ Doctor Private - Yes, No 2. Doctor – AYUSH Yes, No 3. Quack –Yes, No 4. ANM/ASHA/AWW- Yes, No 5. Friends/Neighbors/Relatives- Yes, No 6. Poster/Banner/Television/ Radio/ Newspaper/ print media - Yes, No 7. Social Media/Mobile- Yes, No 8. Street plays/ Folk shows/Drum beating/Miking etc. – Yes, No 9. Political Leader/Gram Pradhan/ Religious leader – Yes, No 10. Mothers meeting/Mahila Aarogya Samiti– Yes, No 11. School teachers/Social worker – Yes, No 12. No information regarding immunization 13. Any other (Please specify)..... 	
7.4	<p>Did you take your child for immunization after hearing about rumors/negative stories?</p>	<ol style="list-style-type: none"> 1. Yes 2. No 	

Section 8: Knowledge, attitude and practice regarding immunization

Q. No.	Questions	Coding	Skip to
8.1	Mention the name of diseases prevented by vaccines provided to your child Multiple-choice question	1. Hepatitis-B/Peeliya/Jaundice 2. Tuberculosis/kshhay rog 3. Polio 4. Diphtheria/ Gal ghontu 5. Pertussis/whooping cough/ kaali khansi 6. Tetanus/dhanushtankar 7. Haemophilus influenza-type b/ pneumonia 8. Diarrhea 9. Measles/khasra 10. Don't remember 11. Other	
8.2	Do you feel that immunization is safe? (If the community is asking back with "is it?" the interviewer can pacify saying there may be some concerns around vaccine safety etc.)	1. Yes 2. No 3. Don't know	Skip to 8.4 if 1
8.3	If no, what are the reasons	1. Fear of side effects/Immunization is painful 2. Advised against immunization 3. Vaccine makes the child infertile 4. Doubt the quality of vaccines 5. Any Other Reason (Specify)..... 6. Don't Know	
8.4	Are you comfortable in discussing immunization related queries with ANM/ASHA/AWW/Doctor?	1. Yes 2. No 3. Never discussed/don't have questions to ask	
8.5	Have you ever paid for any vaccine?	1. Yes 2. No	
8.6	Will you be willing to pay for vaccines if required?	1. Yes 2. No	

Section 9: Interventions

Q. No.	Questions	Coding	Skip to
9	Whose advice do you follow the most for getting your child immunized? (Multiple-choice allowed)	1. My husband 2. Friend/relative/neighbor 3. Doctor (government)/ Doctor (private) 4. Doctor AYUSH 5. Quack 6. ASHA/ANM/AWW 7. Messages on WhatsApp/Facebook 8. Text Messages/Recorded calls 9. Political Leader/Gram Pradhan/ Religious leader 10. Social worker/School teacher 11. Folk shows/Community films 12. Mother's meeting/Mahila Aarogya Samiti (MAS) 13. Any other (please specify)..... rating	

9.1: Decision Coaching

Q. No.	Questions	Coding	Skip to
9.1.1	Have you attended mothers meeting on immunization in your AWC (or in other locations) in your village?	1. Yes 2. No 3. Don't know/not aware of mother's meeting	Skip to 9.1.5 if 2 or 3
9.1.2	Were your questions/ doubts regarding immunization cleared during the meeting?	1. Yes 2. No	
9.1.3	Is the timing of the mothers meeting convenient for you?	1. Yes 2. No	Skip to 9.1.5 if 1
9.1.4	If not, please suggest appropriate timing	1. Morning 2. Afternoon 3. Evening	
9.1.5	Did ASHA/AWW/mobilizer pay a visit to your house to discuss about Immunization?	1. Yes 2. No	
9.1.6	Have you ever attended any health camp in the past one year in your area, where you/ your child were provided free health check-up by a medical doctor?	1. Yes 2. No 3. No camp organized in my area 4. Don't know	

9.2: Immunization Counsellor

Q. No.	Questions	Coding	Skip to
9.2.1	Do you come to know about immunization on the occasions of religious congregation /activities/announcements?	1. Yes 2. No	
9.2.2	Has any of the following persons advised you regarding your child's immunization? <i>(Multiple choice possible)</i>	1. Doctor (government)/ Doctor (private) 2. Doctor AYUSH 3. Quack 4. ASHA/ ANM/ AWW 5. Friends/relatives/neighbor 6. Messages on WhatsApp/Facebook 7. Political Leader/Gram Pradhan/Religious leader 8. Social worker/ School teacher 9. Any other (please specify).....	

9.2.3	Has any of the following persons ever told you not to vaccinate your child? <i>(Multiple choice allowed)</i>	1. Doctor (government)/ Doctor (private) 2. Doctor AYUSH 3. Quack 4. ASHA/ ANM/ AWW 5. Friends/relatives/neighbour 6. Messages on WhatsApp/Facebook 7. Political Leader/Gram Pradhan/Religious leader 8. Social worker/ School teacher 9. Any other (please specify).....	
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9.3: Immunization synergism

Q. No.	Questions	Coding	Skip to
9.3.1	Did your child ever receive any other health service apart from immunization in an immunization session? <i>(Multiple answers possible for those, who say yes received)</i>	1. Yes, ORS/Zn packets 2. Yes, Vitamin A 3. No 4. Don't know	
9.3.2	Will you like to receive health services for minor ailments for your child on a session day?	1. Yes 2. No 3. Don't know	
9.3.3	Do you receive <i>Poshahaar</i> (nutritional diet) at AWC on an immunization day?	1. Yes 2. No	

9.4: Integration of AYUSH (Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy)

Q. No.	Questions	Coding	Skip to
9.4.1	What is the most preferred system of medicine that the family seeks? <i>(Multiple answers are possible)</i>	1. Gov. health set up -Allopathic 2. Private health set up – Allopathic 3. Gov. health set up – AYUSH 4. Private health set up - AYUSH 5. Quack 6. None	
9.4.2	Have you received immunization services (outreach session being held at AYUSH center) for your child at any AYUSH center?	1. Yes 2. No	

9.5: Recall/reminder

Q. No.	Questions	Coding	Skip to
9.5.1	Do you or someone else in your family has a mobile phone? multiple choice	1. Yes, myself 2. Yes, other family member 3. No	Skip to 9.6.1, if 3
9.5.2	What type of phone do you use?	1. Smart Phone 2. Basic feature phone 3. Both	
9.5.3	Who are the users of mobile phone?	1. Myself 2. Family members 3. Myself and family members 4. None	Skip to 9.6.1 if 4
9.5.4	What features of phone you or family members are comfortable in using? (Multiple options)	1. Voice call 2. SMS 3. WhatsApp 4. Other social media like Facebook, twitter etc. 5. Watching Video 6. Other (specify).....	
9.5.5	In which language can you/ your family read an SMS/ message/video? (Multiple options)	1. Hindi 2. Urdu 3. English 4. can't read 5. Any other language (specify).....	
9.5.6	Would it be helpful if reminder SMS informing about date, time and place of vaccination are sent to you before every dose?	1. Yes 2. No	
9.5.7	Do you receive any immunization message through these sources?	1. SMS –Yes/No 2. Recorded Voice call–Yes/No 3. WhatsApp messages–Yes/No 4. Other social media messages–Yes/No 5. Any other please specify–Yes/No	

9.6: Mid Media engagement

Q. No.	Questions	Coding	Skip to
9.6.1	Have you attended any folk show on immunization in the past one year in your area?	1. Yes 2. No	
9.6.2	Will you or any family member be interested in watching any folk show on immunization?	1. Yes 2. No	

9.6.3	Have you attended any community film on immunization in the past one year in your area?	1. Yes 2. No	
9.6.4	Will you or any family member be interested in watching any community films on immunization?	1. Yes 2. No	

9.7: Peer mother appraisal

Q. No.	Questions	Coding	Skip to
9.7.1	Do you consult any influential person (other than health worker) for personal or health matter?	1. Yes 2. No	Skip to 9.7.3 if 2
9.7.2	If yes, specify who is the person? (Multiple options)	1. Elderly women 2. Elderly men 3. Political figure women 4. Political figure men 5. School Teacher women 6. School Teacher men 7. Social worker women 8. Social worker men 9. Other, specify	
9.7.3	Do you agree to immunize your child, if mother of fully immunized child will sensitize/motivate you?	1. Yes 2. No	
9.7.4	Have you ever received immunization messages from any influential women like elderly women etc.	1. Yes 2. No	

9.8: Non-financial incentives

Q. No.	Questions	Coding	Skip to
9.8.1	Will you be motivated, if you receive any certificate of recognition after fully immunizing your child?	1. Yes 2. No 3. Don't know	
9.8.2	Do you know any person who has received any recognition/certificate for immunizing their child?	1. Yes 2. No	

9.9 Tailoring Immunization Programme

Questions pertaining to TIP are covered in section 6 (Q6.1- Q6.4)

9.10 Health literacy using technology

Questions pertaining to health literacy and technology in section 7 and section 9 (Q7.1, Q9, Q9.2.2, Q9.5.1- Q9.5.7)

Section 10: Women's Empowerment and Decision Making

(Applicable only if the respondent is mother of the child (Q 2.1=1))

Q. No.	Questions	Coding	Skip to
10.1	Do you have a bank/post office account which you can use on your own? (If the mother has a joint account with someone else, please consider this as her account)	1. Yes 2. No	
10.2	Who keeps your/your husband's earnings? (Ask who keeps the income of the husband)	1. Keep the total amount with me 2. Keep some and give the rest to family 3. Husband 4. Mother-in-law 5. Father-in-law 6. Other (Specify)	Not Applicable if 2.5 is 3 and 2.11 is 3
10.3	Can you spend your/your husband's earned money in the way you want?	1. Most of the time 2. Occasionally 3. Never 4. Not Applicable	Not Applicable if 2.5 is 3 and 2.11 is 3
10.4	Who in your family makes decisions to buy foods/staples/ vegetables for family members	1. Mainly Myself 2. Mainly husband 3. Jointly with husband 4. Jointly with other members 5. Other members	

10.5	Who in your family makes decisions about the place of delivery?	1. Mainly Myself 2. Mainly husband 3. Jointly with husband 4. Jointly with other members 5. Other members	Applicable if 2.1.1 is 1 and 2.1.4 is 1
10.6	Who in your family makes decisions about educating children?	1. Mainly Myself 2. Mainly husband 3. Jointly with husband 4. Jointly with other members 5. Other members	
10.7	Who in your family makes decisions about what to do when a child is ill?	1. Mainly Myself 2. Mainly husband 3. Jointly with husband 4. Jointly with other members	
10.8	Who in your family makes decisions about immunizing children?	1. Mainly Myself 2. Mainly husband 3. Jointly with husband 4. Jointly with other members 5. Other members	
10.9	Do you need permission from husband/senior family members to visit? (Multiple answers are possible)	1. The local health care provider/facility 2. Relatives or friends 3. The market/local KIRANA shop 4. None of them	

HOUSEHOLD Questionnaire

Instruction: The respondent of this questionnaire can be Mother/primary caregiver or Head of the household.

Section 11: Basic Household Information

Q. No.	Questions	Coding	Skip to
11.1	Religion of the household	1. Hindu 2. Muslim 3. Christian 4. Sikh 5. Buddhist/Neo-Buddhist 6. Jain 7. No religion 8. Other (Specify) 9. No response/Don't Know	
11.2	What is your caste/ tribe?	1. Scheduled Caste 2. Scheduled Tribe 3. Other Backward Caste (OBC) 4. Other Caste 5. Don't know/No response 6. Please record the caste.....	

11.3	<p>What is the type of dwelling where household is living?</p> <p><i>(Kutcha house is simply made of mud or clay or lime mortar with weaker materials. Semi-Pucca house is one of which either the roof or the walls, but not both is made of pucca materials like burnt bricks, stone, cement, concrete or timber. Pucca House means with proper cement material like cement and complete RCC or regular load-bearing one but with proper roofing and everything.)</i></p>	<ol style="list-style-type: none"> 1. Kutcha 2. Semi-Pucca 3. Pucca 	
11.4	<p>What is the main source of drinking water for your household?</p>	<ol style="list-style-type: none"> 1. Tap water (HH supply) 2. Public tap 3. Tube well 4. Hand pump 5. Protected/ Unprotected well 6. Unprotected spring 7. Rainwater 8. Tanker truck 9. Surface water (river/dam/lake/pond/stream/canal/irrigation channel) 10. Bottled water/RO 11. Other, specify 	
11.5	<p>Where do household members go for defecation?</p>	<ol style="list-style-type: none"> 1. Own HH toilet 2. Shared toilet 3. Community toilet 4. Open defecation 5. Other, specify 6. No toilet 	
11.6	<p>What is the main source of lighting?</p>	<ol style="list-style-type: none"> 1. Electricity 2. Kerosene 3. Solar 4. Other oils 5. No lighting 6. Other, specify 	
11.7	<p>What is the main source of fuel for cooking</p>	<ol style="list-style-type: none"> 1. Firewood 2. Dung cake 3. Leaves/ straw 4. Coal 5. Kerosene 6. Bio-Gas 7. LPG/ Natural gas 8. Electricity 9. Other 	
11.8	<p>Does your household have the following assets? <i>(Multiple-choice question)</i></p>	<ol style="list-style-type: none"> 1. Watch/ clock 2. Radio/ music system 3. Television 4. Mobile phone 5. Refrigerator 6. Computer/ laptop 7. Washing machine 8. Air cooler 9. Air conditioner 10. Bicycle 11. Motorcycle/ scooter (2 wheeler) 12. Car/ jeep (4-wheeler) 13. Tractor 	

Please record the end time after completing the interview

End Time:

Annexure 2: List of contributors

NEXUS PLANNING MEETING - PARTICIPANTS		
Department of Health and Family Welfare		
No	Name	Designation
1	Dr Rajesh Batish	Civil Surgeon
2	Dr Lokveer Singh	Deputy Civil Surgeon
3	Dr Basant Dubey	District Immunization Officer
4	Dr Vikram	Nodal Officer, Maternal Health
5	Dr Krishan Kumar	Senior Medical Officer
6	Dr Sachin Rastogi	Pathologist
7	Dr Yogesh Kumar	Medical Officer In Charge
8	Dr Manish Choudhury	Medical Officer In Charge
9	Dr Manu	Medical Officer In Charge
10	Dr Devender	Medical Officer
11	Dr Mohd. Tahir	Medical Officer
12	Dr Ravi Kumar	Medical Officer
13	Dr Rohit Raman	Medical Officer
14	Ms Razia	District ASHA Coordinator
15	Mr Arshad	District ASHA Coordinator
16	Ms Rajni	ASHA Facilitator
Shaheed Hasan Khan Mewati Government Medical College		
1	Dr Pawan Kumar Goel	Professor
2	Dr Mahasingh	Associate Professor
3	Dr Abhishek Singh	Associate Professor
4	Dr Rakhi Jain	Associate Professor
5	Dr Bhupesh Gupta	Junior Resident
Department of Education		
1	Mr Satya	Deputy District Education Officer
Department of Women and Child Development		
1	Ms Simpi	Supervisor, Women and Child Development
Front Line Workers		
1	Ms Angrejo	Auxiliary Nurse Midwife
2	Ms Parmila	Auxiliary Nurse Midwife
3	Ms Rabina	Multi-purpose Health Worker
4	Ms Jahida	Anganwadi Worker
5	Ms Kamla Devi	Anganwadi Worker
6	Ms Momina	Anganwadi Worker
7	Ms Mukesh	Anganwadi Worker
8	Ms Ratan Bai	Anganwadi Worker
9	Ms Mehram	Accredited Social Health Activist
10	Ms Rita Devi	Accredited Social Health Activist
11	Ms Saroj	Accredited Social Health Activist
12	Ms Saroj Dahiya	Accredited Social Health Activist
13	Ms Savita	Accredited Social Health Activist
14	Ms Sonu	Accredited Social Health Activist

Partners		
1	Dr Sanjeev Tanwar	Surveillance Medical Officer - WHO
2	Mr Sanjay	District Technical Officer, IPE Global
3	Mr Abhishek Gupta	Program Manager, CGPP
4	Mr Mohasin Alam	District Mobilization Coordinator, Chetanalya
5	Mr Akhlesh Kumar	Program Manager, Chetanalya
6	Mr Tafajjul	Block Mobilization Coordinator, CORE
7	Mr Akhtar Husain	Block Mobilization Coordinator, CGPP
8	Mr Imran Khan	Cluster Coordinator, CGPP
9	Mr Khalid Hussain	Mobilizer Mitra, Chetanalya
10	Mr Sanjay	Mobilizer Mitra, Chetanalya
11	Mr Vikram	Mobilizer Mitra, Chetanalya
Immunization Technical Support Unit (ITSU)		
1	Dr Pritu Dhalaria	Director
2	Dr Gopal Krishna Soni	Team Lead
3	Dr Prem Singh	Team Lead
4	Dr Deepak Polpakara	Team Lead
5	Mr Raju Tamang	Team Lead
6	Mr Ajai Kumar S	Team Lead
7	Ms Jhimly Baruah	Program Lead
8	Dr Shobha G	Senior Technical Officer
9	Mr Kishor Bajaj	Senior Manager - Operation
10	Dr Ansuman Das	Senior Program Manager
11	Ms Gauri Rishi	Senior Program Manager
12	Dr Kamlesh Kumar	Program Manager
13	Dr Shreeparna Ghosh	Research Manager
14	Dr Amrita Kumari	Program Manager
15	Dr Sourabh Saxena	Program Manager
16	Dr Ginisha Gupta	Program Manager
17	Mr Amit Namdeo	Applied Vaccine Information Technology Specialist
18	Ms Apurva Rastogi	Project Officer
19	Ms Satabdi Kashyap	Research Officer
20	Dr Mrinal Kar Mohapatra	Research Officer
21	Dr Ruma Bhargava	Research Officer
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